CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP/
TRV36E/TRV46E
RMT-708

SERVICE MANUAL

Self Diagnostics
Supported model

Ver 1.0 1999.01

Photo : CCD-TR713E

Photo : CCD-TRV46E

AEP Model
UK Model
Russian Model
East European Model
North European Model
CCD-TR415E/TR425E/TR515E/TR713E
CCD-TRV26E/TRV27E/TRV36E/TRV46E
E Model
CCD-TR315E/TR516E
CCD-TRV16E/TRV27EP/TRV46E
Hong Kong Model
CCD-TR315E/TR516E
CCD-TRV16E/TRV46E
Australian Model
CCD-TR315E/TR516E
CCD-TRV16E/TRV46E
Chinese Model
CCD-TR315E/TR516E
CCD-TRV16E/TRV46E
Tourist Model
CCD-TR315E/TRV46E

Handycam
Handycam Vision™
Video 8 XR
video Hi8

B MECHANISM

PAL

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 Rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
PAL color, CCIR standards

Usable cassette
8mm video format cassette
CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/
TRV27EP : standard 8

CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E : Hi8

Recording / Playback time
(using 90 min. cassette)
SP mode: 1 hour and 30 minutes
LP mode: 3 hours

Fastforward/rewind time
(using 90 min. cassette)
Approx. 5 min.

Image device
1/4 inch CCD (Charge Coupled Device)
CCD-TR315E/TR415E/TR425E/
TR515E/TR516E
CCD-TRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E : Approx. 320,000 pixels (Effective : approx 290,000 pixels)
CCD-TR713E
CCD-TRV46E : Approx. 380,000 pixels
(Effective : approx 230,000 pixels)

Viewfinder
Electronic viewfinder
CCD-TR315E/TR415E/TR425E/
TR515E/TR713E/TRV series :
Monochrome
CCD-TR516E : Color

Lens
Combined power zoom lens
Filter diameter 1 7/16 in. (37 mm)
CCD-TR415E : AEP*,UK
CCD-TRV26E : AEP*,UK
: 18 x (Optical), 36 x (Digital)

CCD-TR425E : AEP*,UK
TR515E : AEP*,UK
TR713E : AEP*,UK
CCD-TRV27E : AEP*,UK
TRV36E : AEP*,UK
TRV46E : AEP*,UK
: 18 x (Optical), 72 x (Digital)

CCD-TR315E
CCD-TRV16E
: 18 x (Optical), 180 x (Digital)

CCD-TR415E : AEP*,EE,NE.RU
CCD-TRV26E : AEP*,EE,NE.RU
: 18 x (Optical), 220 x (Digital)

CCD-TR425E : AEP*,EE,NE,RU
TR515E : AEP*,EE,NE,RU
TR516E
TR713E : AEP*,EE,NE,RU
CCD-TRV27E : AEP*,EE,NE,RU
TRV27EP
TRV36E : AEP*,EE,NE,RU
TRV46E : AEP*,E,EE,NE,RU,HK, AUS,CN,JE
: 18 x (Optical), 330 x (Digital)

* There are two kinds of magnification of Digital Zoom only AEP model. Please make sure the magnification of your Handycam with reference to page 3.

Focal distance
3/16 - 8 in. (4.1 - 37.8 mm)
When converted to a 35 mm still camera
CCD-TR315E/TR415E/TR425E/
TR515E/TR516E
CCD-TRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E
: 1 9/16 - 28 in. (39.4 - 709 mm)
CCD-TR713E
CCD-TRV46E
: 1 7/8 - 33 1/2 in. (47.2 - 850 mm)

— Continued on next page —

8 VIDEO CAMERA RECORDER
CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP

Hi 8 VIDEO CAMERA RECORDER
CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E

SONY®

MICROFILM

Color temperature
Auto

Minimum illumination*
0.4 lux at F 1.4
0 lux (in NightShot mode)**

Illumination range
0.4 lux to 100,000 lux

Recommended illumination
More than 100 lux

* Minimum illumination expresses the light level a camcorder requires to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.

**Object invisible for the dark can be shot with infrared lighting.

LCD screen (TRV series only)

Picture
2.5 inches measured diagonally
2 x 1 1/2 in.(50.3 x 37.4 mm)

On-screen display
TN LCD/TFT active matrix method

Total dot number
61,380 (279 x 220)

Input and output connectors

Video output
Phono jack, 1 Vp-p, 75 ohms, unbalanced

Audio output
Monaural, Phone jack, 327 mV
(at output impedance 47 kilohms)
impedance less than 2.2 kilohms

RFU DC OUT
Special minijack, DC 5V

Earphone jack (TRV series only)
Monaural minijack (ø 3.5 mm)

LANC control jack
Stereo mini-minijack (ø 2.5 mm)

MIC jack
Mini jack, 0.388mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm) : Monaural type

Speaker (TRV series only)
Dynamic speaker

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Average power consumption (when using the battery pack)
During camera recording
CCD-TR516E : 2.4 W
CCD-TR315E/TR415E/TR425E/TR515E : 2.5 W
CCD-TR713E : 2.6 W
During camera recording using LCD
CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E : 3.1 W
CCD-TRV46E : 3.2 W
Viewfinder
CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E : 2.5 W
CCD-TRV46E : 2.6 W

Operating temperature
32°FC to 104°F (C0°C to 40°C)

Storage temperature
-4°FC to 140°F (-20°C to +60°C)

Dimensions (Approx.)
4 1/4 x 4 1/4 x 7 5/8 in.
107 x 107 x 193 mm)(w/h/d)

Mass (Approx.)
CCD-TR516E : 1 lb 11 oz (780 g)
CCD-TR315E : 1 lb 11 oz (790 g)
CCD-TR415E/TR425E/TR515E : 1 lb 12 oz (810 g)
CCD-TR713E : 1 lb 12 oz (820 g)
CCD-TRV16E/TRV27EP : 1 lb 14 oz (870 g)
CCD-TRV46E ; E,HK,AUS,CN,JE : 1 lb 15 oz (880 g)
CCD-TRV26E/TRV27E/TRV36E : 1 lb 15 oz (890 g)
CCD-TRV46E ;AEP,UK,EE,NE,RU : 1 lb 15 oz (900 g)
excluding the battery pack, lithium battery, cassette and shoulder strap
2 lb 3 oz (1 kg) (TRV series)
CCD-TR516E : 2 lb 1 oz (920g)
CCD-TR315E : 2 lb 1 oz (930g)
CCD-TR415E/TR425E/TR515E : 2 lb 1 oz (950g)
CCD-TR713E : 2 lb 1 oz (960g)
including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

Microphone
Monaural type

Supplied accessories
See page 4.

AC power adaptor

Power requirements
100 -240 V AC, 50/60 Hz

Power consumption
23 W

Output voltage
DC OUT: 8.4 V, 1.5 A in operating mode

Operating temperature
32°F to 104°F(0°C to 40°C)

Storage temperature
-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx.)
5 x 1 9/16 x 2 1/2 in. (125 x 39 x 62 mm)(w/h/d) excluding projecting parts

Mass (Approx.)
9.8 oz (280 g) excluding power cord

Design and specifications are subject to change without notice.

- Abbreviation
  East European model is abbreviated as EE.
  North European model is abbreviated as NE.
  Russian model is abbreviated as RU.
  Hong Kong model is abbreviated as HK.
  Australian model is abbreviated as AUS.
  Chinese model is abbreviated as CN.
  Tourist model is abbreviated as JE.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Table for difference of function

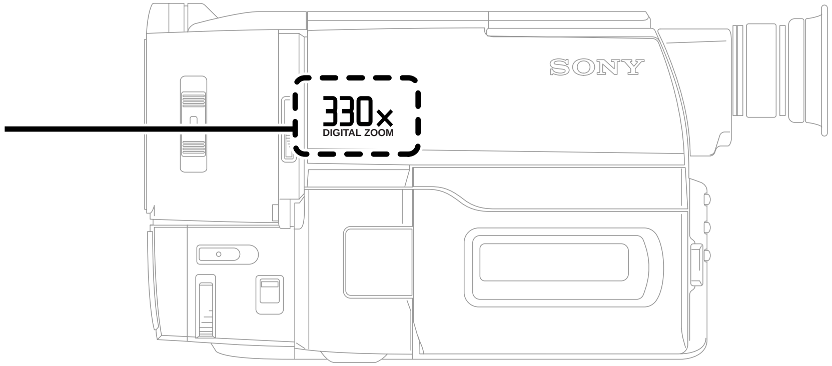
Model	CCD-TR315E	CCD-TR415E	CCD-TR415E	CCD-TR425E	CCD-TR425E	CCD-TR515E	CCD-TR515E	CCD-TR516E	CCD-TR713E	CCD-TR713E	Remark
Destination	E,HK,AUS, CN,JE	AEP,UK	EE,NE,RU	AEP,UK	EE,NE,RU	AEP,UK	EE,NE,RU	E,HK,AUS, CN	AEP,UK	EE,NE,RU	
View finder	B/W	B/W	B/W	B/W	B/W	B/W	B/W	Color	B/W	B/W	
Remote commander (RMT-708)	✕	✕	✕	○	○	○	○	○	○	○	
Hi8	✕	✕	✕	✕	✕	○	○	○	○	○	
Standard 8	○	○	○	○	○	✕	✕	✕	✕	✕	
Lens (Digital ZOOM)	180x	36x/220x	220x	72x/330x	330x	72x/330x	330x	330x	72x/330x	330x	**Note : Refer to lower figure.**
Video light	✕	✕	✕	✕	✕	○	○	○	○	○	
Steady shot	✕	✕	✕	✕	✕	✕	✕	✕	○	○	○ : with SE-80/81board SE451,452,IC451
Laser Link	✕	✕	✕	✕	✕	✕	✕	✕	○	○	○ : with VC-215 board IC751
LCD panel	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	2.5 inch : TRV series only

Model	CCD-TRV16E	CCD-TRV26E	CCD-TRV26E	CCD-TRV27E	CCD-TRV27E	CCD-TRV27EP	CCD-TRV36E	CCD-TRV36E	CCD-TRV46E	CCD-TRV46E	Remark
Destination	E,HK,AUS, CN	AEP,UK	EE,NE,RU	AEP,UK	EE,NE,RU	E	AEP,UK	EE,NE,RU	AEP,UK	E,EE,NE,RU HK,AUS,CN,JE	
View finder	B/W	B/W	B/W	B/W	B/W	B/W	B/W	B/W	B/W	B/W	
Remote commander (RMT-708)	✕	✕	✕	○	○	○	○	○	○	○	
Hi8	✕	✕	✕	✕	✕	✕	○	○	○	○	
Standard 8	○	○	○	○	○	○	✕	✕	✕	✕	
Lens (Digital ZOOM)	180x	36x/220x	220x	72x/330x	330x	330x	72x/330x	330x	72x/330x	330x	**Note : Refer to lower figure.**
Video light	✕	✕	✕	✕	✕	✕	○	○	○	○	
Steady shot	✕	✕	✕	✕	✕	✕	✕	✕	○	○	○ : with SE-80/81board SE451,452,IC451
Laser Link	✕	✕	✕	✕	✕	✕	✕	✕	○	○	○ : with VC-215board IC751
LCD panel	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch : TRV series only

- Abbreviation
  East European model is abbreviated as EE.
  North European model is abbreviated as NE.
  Russian model is abbreviated as RU.
  Hong Kong model is abbreviated as HK.
  Australian model is abbreviated as AUS.
  Chinese model is abbreviated as CN.
  Tourist model is abbreviated as JE.

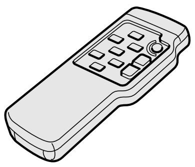
About the magnification display of ▨ section

There are two kinds of magnification of Digital zoom only for the AEP model. Please make sure the magnification of your Handycam with reference to the right figure.

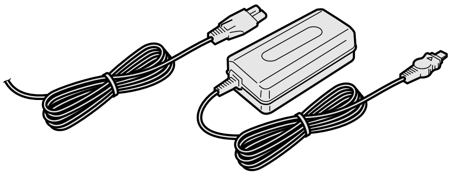


Supplied accessories

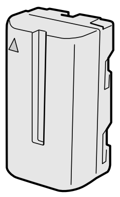
1



2



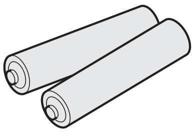
3



4

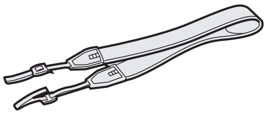
CR2025
SONY
+

5

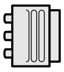


6

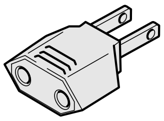
7



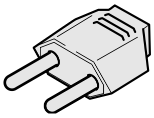
8



9



10



1 **RMT-708 Wireless Remote Commander (1)**
CCD-TR425E/TR515E/TR516E/TR713E
CCD-TRV27E/TRV27EP/TRV36E/TRV46E

2 **AC-L10A/L10B/L10C AC power adaptor**

3 **NP-F330 Battery pack (1)**

4 **CR2025 Lithium Battery (1)**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**
CCD-TR425E/TR515E/TR516E/TR713E
CCD-TRV27E/TRV27EP/TRV36E/TRV46E

6 **A / V connecting cable (1)**

7 **Shoulder strap (1)**

8 **21 pin adaptor (1)**
CCD- TR415E/TR425E/TR515E/TR713E
CCD- TRV26E/TRV27E/TRV36E
TRV46E:AEP,UK,EE,NE,RU

9 **2 pin conversion adaptor (1)**
CCD- TR315E:E,HK/TR516E:E,HK
CCD- TRV16E:E,HK/TRV27EP/TRV46E:E,HK

10 **2 pin conversion adaptor (1)**
CCD- TR315E:JE
CCD- TRV46E:JE

- Abbreviation
  East European model is abbreviated as EE.
  North European model is abbreviated as NE.
  Russian model is abbreviated as RU.
  Hong Kong model is abbreviated as HK.
  Tourist model is abbreviated as JE.

SERVICE NOTE

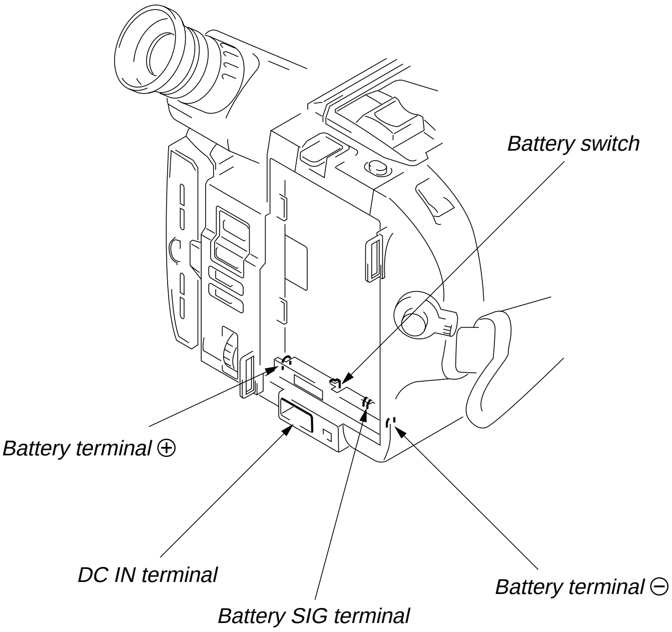
1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following three methods are available to prevent this. Take note of which to use during repairs.

Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the “ADJ” side.

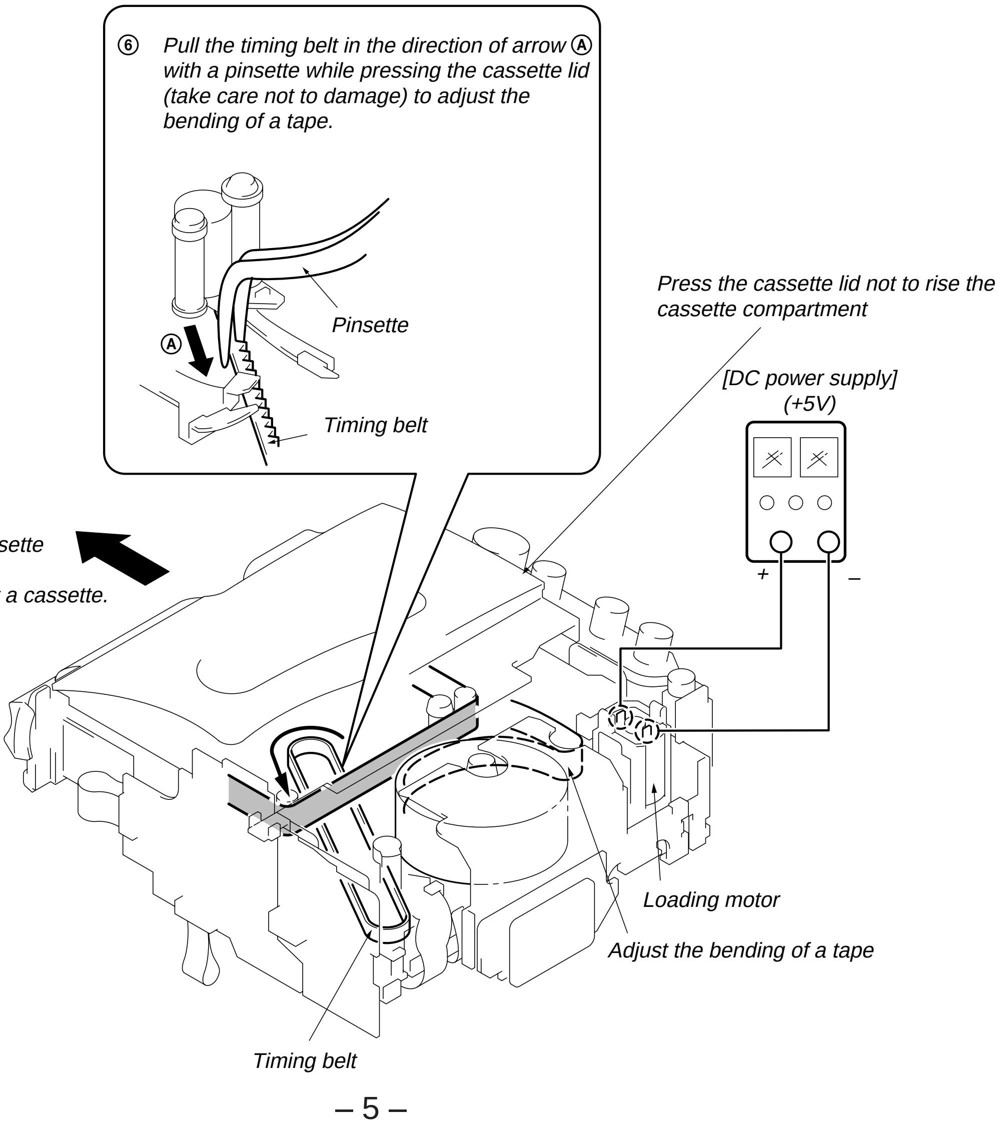
Method 2.
Press the battery switch of the battery terminal using adhesive tape, etc.

Method 3.
Use the DC IN terminal. (Use the AC power adaptor.)


Battery switch
Battery terminal ⊕
DC IN terminal
Battery SIG terminal
Battery terminal ⊖

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel block.
② Refer to 2-4. to remove the cabinet (R) assembly.
③ Refer to 2-6. to remove the battery panel block.
④ Refer to 2-7. to remove the cabinet (L) block.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



⑥ *Pull the timing belt in the direction of arrow Ⓐ with a pinsette while pressing the cassette lid (take care not to damage) to adjust the bending of a tape.*

⑦ *Let go your hold the cassette lid and rise the cassette compartment to take out a cassette.*

Press the cassette lid not to rise the cassette compartment

Ⓐ
Pinsette
Timing belt
[DC power supply]
(+5V)
+
–
Loading motor
Adjust the bending of a tape
Timing belt

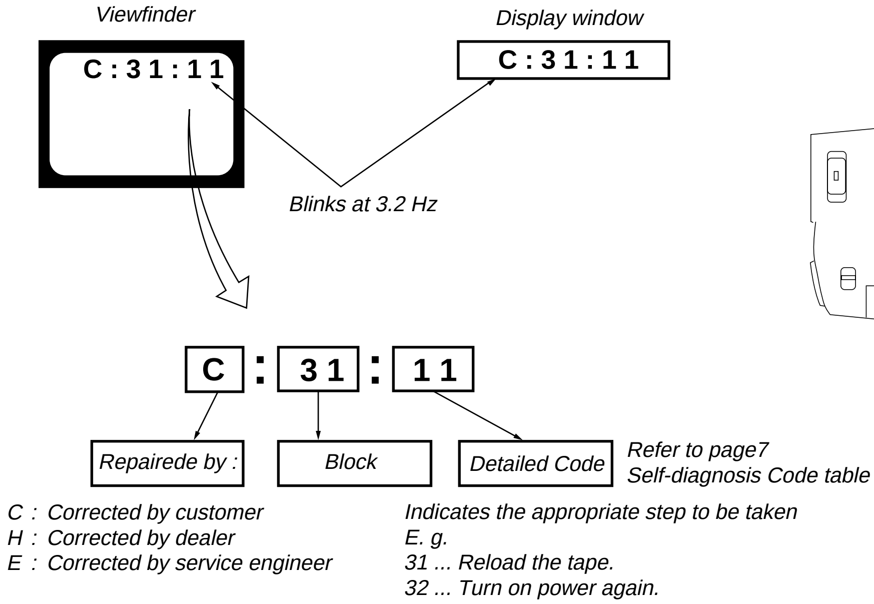
SELF-DIAGNOSIS FUNCTION

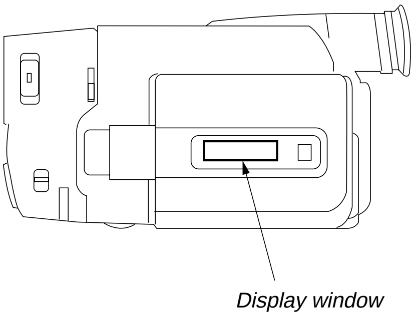
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis display

When problems occur while the unit is operating, the counter of the viewfinder or Display window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.


Viewfinder
C : 3 1 : 1 1
Display window
C : 3 1 : 1 1
Blinks at 3.2 Hz
C : 31 : 11
Repairede by :
Block
Detailed Code
Refer to page7
Self-diagnosis Code table
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken
E. g.
31 ... Reload the tape.
32 ... Turn on power again.

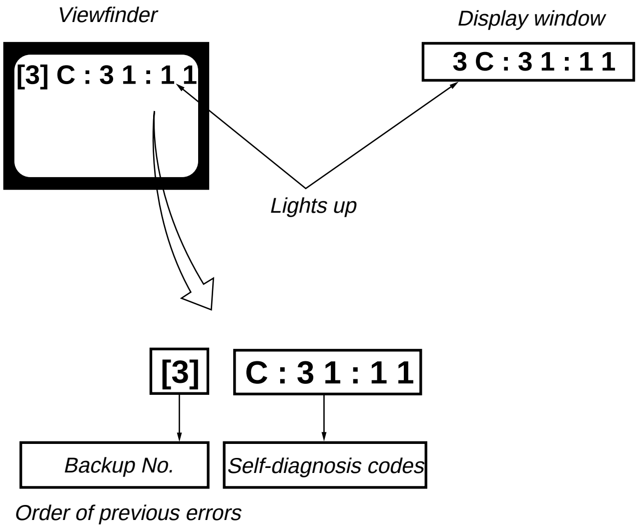

Display window

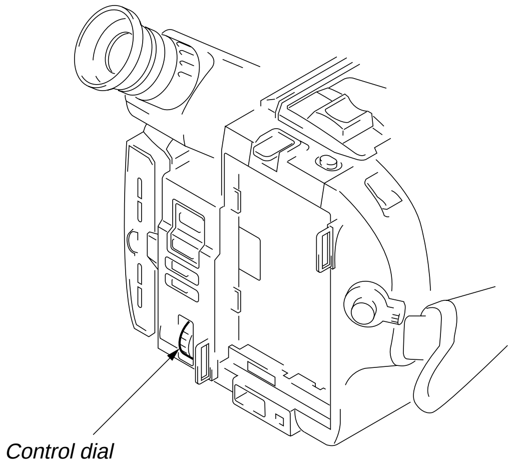
3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VTR or PLAYER”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.


Viewfinder
[3] C : 3 1 : 1 1
Display window
3 C : 3 1 : 1 1
Lights up
[3]
C : 3 1 : 1 1
Backup No.
Self-diagnosis codes
Order of previous errors


Control dial

3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	21	00	Condensation.	Remove the cassette, and insert it again after one hour.
C	22	00	Video head is dirty.	Clean with the optional cleaning cassette.
C	23	00	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	31	10	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	31	11	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	31	20	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	31	21	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	31	22	T reel fault	Load the tape again, and perform operations from the beginning.
C	31	23	S reel fault	Load the tape again, and perform operations from the beginning.
C	31	30	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	31	31	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	31	40	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	31	41	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	31	42	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	31	43	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	31	44	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	32	10	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	11	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	20	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	21	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	22	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	23	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	30	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	31	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	40	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	41	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	42	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	43	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	44	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	61	00	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN551 of VC-215 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC552 of VC-215 board) when the focusing is not performed. Note : Use the remote commander RM-95 only for the model without the focus dial.
E	61	10	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN551 of VC-215 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC552 of VC215 board) when zooming is not performed.
E	62	00	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE451 of SE-80/81 board) peripheral circuits.
E	62	01	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE452 of SE-80/81 board) peripheral circuits.

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SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TRV16E/TRV27E/TRV46E.

Before you begin

Перед началом эксплуатации

Using this manual

Использование данного руководства

The instructions in this manual are for the three models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TRV46E is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TRV46E only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
You can hear the beep sound to confirm your operation.

Инструкции в данном руководстве касаются трех нижеперечисленных моделей. Перед тем, как Вы начнете читать данное руководство и эксплуатировать аппарат, проверьте номер Вашей модели, посмотрев на нижнюю панель Вашей видеокамеры. Модель CCD-TRV46E используется в иллюстративных целях. В противном случае наименование модели указывается на рисунках. Любые различия в работе четко указаны в тексте, как например, "Только CCD-TRV46E".
Когда Вы будете читать данное руководство, учитывайте, что кнопки и установки на видеокамере показаны в тексте прописными буквами.
Прим. Установите выключатель POWER в положение CAMERA.
Вы можете слышать зуммерный звуковой сигнал, подтверждающий выполнение соответствующей операции.

Types of differences

Типы различий

CCD-	TRV16E	TRV27E	TRV46E
System/ Система	8	8	Hi8
Digital zoom/ Цифровой трансфокатор	180×	330×	330×
SteadyShot/ Устойчивая съемка	—		●
Remote sensor/ Датчик дистанционного управления	—	●	●
Laser link/ ИК аудио/видеоприемник	—	—	●
Built in light/ Встроенная подсветка			●

Using this manual

Использование данного руководства

Note on TV colour systems

TV colour systems differ from country to country. To view your recordings on a TV, you need a PAL system-based TV.

Precaution on copyright

Television programmes, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

- **The LCD screen is manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in colour) that constantly appear on the LCD screen. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 60°C, such as in a car parked in the sun or under direct sunlight **[b]**.

Примечание к системам цветного телевидения

Системы цветного телевидения отличаются в зависимости от страны. Для просмотра Ваших записей по телевизору Вам необходимо использовать телевизор, основанный на системе PAL.

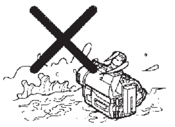
Предостережение об авторском праве

Телевизионные программы, кинофильмы, видеоленты и другие материалы могут быть защищены авторским правом.
Неправомочная запись таких материалов может противоречить условиям закона об авторском праве.

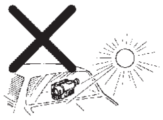
Предосторожности по уходу за видеокамерой

- **Дисплей на жидких кристаллах изготовлен с применением высокопрецизионной технологии. Тем не менее на нем в отдельных местах могут постоянно появляться маленькие черные точки и/или яркие цветные точки (красные, синие или зеленые). Наличие этих точек — нормальный результат производственного процесса, и оно никоим образом не сказывается на качестве записываемого изображения. Свыше 99,99% поверхности дисплея пригодны для эффективной эксплуатации.**
- Не позволяйте видеокамере намокать. Предохраняйте видеокамеру от дождя или морской воды. Если Вы намочите видеокамеру, то это может вызвать неисправность аппарата, и в некоторых случаях эта неисправность не подлежит ремонту **[a]**.
- Никогда не оставляйте видеокамеру в месте с температурой свыше 60°C, как например, в автомобиле, оставленном на солнце или под прямыми солнечными лучами **[b]**.

[a]



[b]

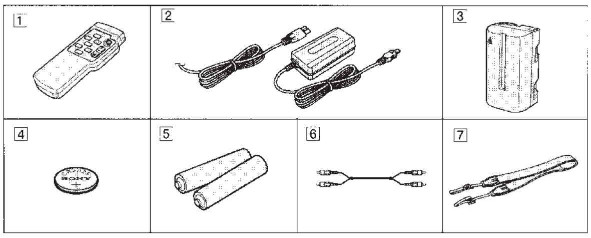


Checking supplied accessories

Проверка прилагаемых принадлежностей

Check that the following accessories are supplied with your camcorder.

Проверьте, что следующие принадлежности прилагаются к Вашей видеокамере.



1. **Wireless Remote Commander** (1) (p. 98)
   CCD-TRV27E/TRV46E only
2. **AC-L10A/L10B/L10C AC power adaptor** (1), **Mains lead** (1) (p. 9, 31)
3. **NP-F330 battery pack** (1) (p. 8, 30)
4. **CR2025 lithium battery** (1) (p. 66)
   The lithium battery is already installed in your camcorder.
5. **R6 (size AA) battery for Remote Commander** (2) (p. 99)
   CCD-TRV27E/TRV46E only
6. **A/V connecting cable** (1) (p. 63)
7. **Shoulder strap** (1) (p. 100)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

1. **Беспроводный пульт дистанционного управления** (1) (стр. 98)
   Только CCD-TRV27E/TRV46E
2. **Сетевой адаптер перем. тока AC-L10A/L10B/L10C** (1), **Сетевой провод** (1) (стр. 9, 31)
3. **Батарейный блок NP-F330** (1) (стр. 8, 30)
4. **Литиевая батарейка CR2025** (1) (стр. 66)
   Литиевая батарейка уже установлена в Вашей видеокамере.
5. **Батарейка R6 (размером AA) для пульта дистанционного управления** (2) (стр. 99)
   Только CCD-TRV27E/TRV46E
6. **Соединительный кабель аудио/видео** (1) (стр. 63)
7. **Плечевой ремень** (1) (стр. 100)

Содержимое записи не может быть компенсировано, если запись или воспроизведение не выполняется вследствие повреждения видеокамеры, видеоленты и т.д.

Getting started

Подготовка к эксплуатации

Installing and charging the battery pack

Установка и зарядка батарейного блока

Before using your camcorder, you first need to install and charge the battery pack.
This camcorder operates only with the "InfoLITHIUM" battery pack (L series).
"InfoLITHIUM" is a trademark of Sony Corporation.

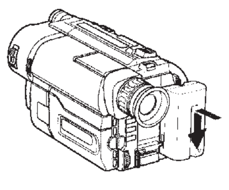
Installing the battery pack

Install the battery pack in the direction of the ▼ mark on the battery pack. Slide the battery pack down until it catches on the battery release lever and clicks.
Attach the battery pack to the camcorder securely.

Перед использованием Вашей видеокамеры Вам нужно сперва зарядить и установить батарейный блок.
Данная видеокамера работает только от батарейного блока "InfoLITHIUM" (серия L).
"InfoLITHIUM" является товарным знаком корпорации Sony.

Установка батарейного блока

Установите батарейный блок в направлении знака ▼ на батарейном блоке. Двигайте батарейный блок вниз до тех пор, пока он не будет захвачен рычагом освобождения батарейного блока и не защелкнется.
Надежно присоедините батарейный блок к видеокамере.



Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

Примечание к батарейному блоку
Не носите видеокамеру, держа ее за батарейный блок.

Charging the battery pack

Charge the battery pack on a flat surface without vibration. The battery pack is charged a little in the factory.

(1) Open the DC IN jack cover and connect the supplied AC power adaptor to the DC IN jack with the plug's ▲ mark up.

(2) Connect the mains lead to the AC power adaptor.

(3) Connect the mains lead to the mains.

(4) Slide the POWER switch to OFF. Remaining battery time is indicated by the minutes on the display window. Charging begins.

When the remaining battery indicator becomes ▭, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack attached for about 1 hour after normal charge is completed until **FULL** appears in the display window.

Before using the camcorder with the battery pack, unplug the AC power adaptor from the DC IN jack of the camcorder. You can also use the battery pack before it is completely charged.

Зарядка батарейного блока

Заряжайте батарейный блок на плоской поверхности, неподверженной вибрации. Батарейный блок заряжен немного на заводе.

(1) Откройте крышку гнезда DC IN и подсоедините прилагаемый сетевой адаптер переменного тока к гнезду DC IN так, чтобы метка ▲ на штекере была расположена сверху.

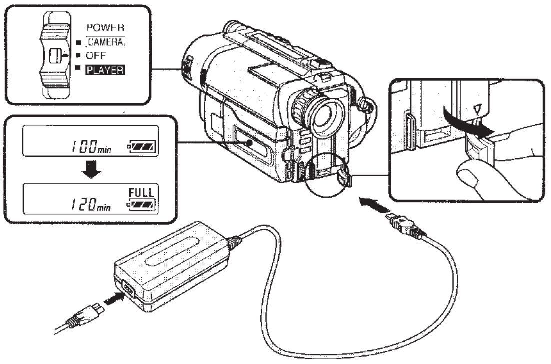
(2) Подсоедините сетевой провод к сетевому адаптеру переменного тока.

(3) Подсоедините сетевой провод к сети.

(4) Передвиньте выключатель POWER в положение OFF. Оставшееся время заряда батарейного блока будет отображаться в минутах в окошке дисплея. Начнется зарядка.

Если индикатор оставшегося заряда батарейного блока будет иметь вид ▭, это значит, что завершена **нормальная зарядка**. Для **полной зарядки**, которая позволяет Вам использовать батарейный блок дольше, чем обычно, оставьте батарейный блок присоединенным примерно на один час после завершения нормальной зарядки, пока в окошке дисплея не появится индикация **FULL**.

Перед использованием видеокамеры с батарейным блоком отсоедините сетевой адаптер переменного тока от гнезда DC IN на видеокамере. Вы можете также использовать батарейный блок до того, как он полностью зарядится.



Notes

- "– – – min" appears in the display window until the camcorder calculates remaining battery time.
- Remaining battery time indication in the display window roughly indicates the recording time with the viewfinder. Use it as a guide. It may differ from the actual recording time.
- If there is a slight difference in shape between the plug of mains lead and the terminal of AC power adaptor, it is ignorable for their mutual connection and power supply.
- Be sure to plug the mains lead deeply into the terminal of AC power adaptor so that it is firmly locked. If there is a gap between the plug of mains lead and the terminal of AC power adaptor, it does not affect the efficiency of the AC power adaptor.

Charging time

Battery pack (NP-)	Charging time* (min.)
F330 (supplied)	150 (90)
F530/F550	210 (150)
F730/F750	300 (240)
F930/F950	390 (330)

The time required for a normal charge is indicated in parentheses.

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Примечания

- "– – – min" появляется на дисплее, пока видеокамера вычисляет время оставшегося заряда батарейного блока.
- Индикация времени оставшегося заряда батарейного блока в окошке дисплея указывает приблизительное время записи с помощью видоискателя. Используйте ее в качестве руководства. Это время может несколько отличаться от действительного времени записи.
- Если существует небольшое различие по форме между штепсельным разъемом сетевых проводов и гнездом сетевого адаптера переменного тока, то это не влияет на их взаимное соединение и подачу питания.
- Обязательно вставьте разъем сетевого провода глубоко в гнездо сетевого адаптера переменного тока так, чтобы он был надежно зафиксирован. Если остается зазор между разъемом сетевого провода и гнездом сетевого адаптера переменного тока, то это не влияет на эффективность сетевого адаптера переменного тока.

Время зарядки

Батарейный блок (NP-)	Время зарядки* (мин.)
F330 (прилагается)	150 (90)
F530/F550	210 (150)
F730/F750	300 (240)
F930/F950	390 (330)

Числа в скобках указывают время для нормальной зарядки.

* Приблизительное время в минутах для зарядки полностью разряженного батарейного блока с использованием прилагаемого сетевого адаптера переменного тока. (При более низких температурах потребуется более длительное время зарядки.)

Battery life

Upper numbers are the time when recording with the viewfinder. Lower numbers are the time when recording with the LCD screen. Using both will further reduce recording time.

CCD-TRV16E/TRV27E

Battery pack (NP-)	Continuous recording time*	Typical recording time**	Playing time on LCD
F330 (supplied)	130 (115) 100 (90)	65 (60) 55 (45)	100 (90)
F530	225 (200) 170 (155)	115 (105) 90 (85)	165 (150)
F550	260 (230) 205 (185)	135 (120) 110 (100)	200 (180)
F730	450 (405) 350 (310)	235 (210) 190 (170)	335 (300)
F750	530 (480) 425 (380)	280 (250) 230 (205)	410 (365)
F930	710 (640) 555 (500)	375 (335) 305 (275)	535 (480)
F950	815 (730) 650 (590)	430 (385) 355 (320)	630 (570)

Срок службы заряда батарейного блока

Верхние цифры указывают время при записи с помощью видоискателя. Нижние цифры указывают время при записи с помощью экрана ЖКД. Использование их обоих значительно снижает время записи.

CCD-TRV16E/TRV27E

Батарейный блок (NP-)	Время непрерывной записи*	Время типичной записи**	Время воспроизведения на ЖКД
F330 (прилагается)	130 (115) 100 (90)	65 (60) 55 (45)	100 (90)
F530	225 (200) 170 (155)	115 (105) 90 (85)	165 (150)
F550	260 (230) 205 (185)	135 (120) 110 (100)	200 (180)
F730	450 (405) 350 (310)	235 (210) 190 (170)	335 (300)
Г750	530 (480) 425 (380)	280 (250) 230 (205)	410 (365)
F930	710 (640) 555 (500)	375 (335) 305 (275)	535 (480)
F950	815 (730) 650 (590)	430 (385) 355 (320)	630 (570)

CCD-TRV46E

Battery pack (NP-)	Continuous recording time*	Typical recording time**	Playing time on LCD
F330 (supplied)	125 (110) 100 (90)	65 (55) 55 (45)	100 (90)
F530	215 (190) 165 (150)	110 (100) 90 (80)	165 (150)
F550	250 (220) 200 (180)	130 (115) 110 (95)	200 (180)
F730	430 (385) 335 (300)	225 (200) 185 (165)	335 (300)
F750	510 (460) 410 (365)	270 (240) 225 (200)	410 (365)
F930	680 (610) 535 (480)	360 (320) 290 (260)	535 (480)
F950	780 (700) 630 (570)	410 (370) 345 (310)	630 (570)

Numbers in parentheses indicate the time when you use a normally charged battery.

Battery life will be shorter if you use the camcorder in a cold environment.

* Approximate continuous recording time at 25°C.

** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Notes on remaining battery time indication during recording

- Remaining battery time is displayed in the viewfinder or on the LCD screen. However, the indication may not be displayed properly, depending on using conditions and circumstances.
- When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining time to be displayed.

CCD-TRV46E

Батарейный блок (NP-)	Время непрерывной записи*	Время типичной записи**	Время воспроизведения на ЖКД
F330 (прилагается)	125 (110) 100 (90)	65 (55) 55 (45)	100 (90)
F530	215 (190) 165 (150)	110 (100) 90 (80)	165 (150)
F550	250 (220) 200 (180)	130 (115) 110 (95)	200 (180)
F730	430 (385) 335 (300)	225 (200) 185 (165)	335 (300)
F750	510 (460) 410 (365)	270 (240) 225 (200)	410 (365)
F930	680 (610) 535 (480)	360 (320) 290 (260)	535 (480)
F950	780 (700) 630 (570)	410 (370) 345 (310)	630 (570)

Числа в скобках указывают время, когда Вы используете нормально заряженный батарейный блок.

Срок службы заряда батарейного блока будет короче, если Вы используете видеокамеру в холодных условиях.

* Приблизительное время непрерывной записи при 25°C.

** Приблизительное время в минутах при записи с повторным началом/остановкой записи, режимом готовности, наездом видеокамеры и включением/выключением питания. Фактический срок службы заряда батарейного блока может быть короче.

Примечания к индикации оставшегося времени работы батарейного блока во время записи.

- Оставшееся время работы батарейного блока отображается в видоискателе или на экране ЖКД. Однако, индикация может отображаться неправильно в зависимости от условий и обстоятельств использования.
- Когда Вы закрываете панель ЖКД и открываете ее снова, требуется приблизительно 1 минута для правильного отображения оставшегося времени.

Installing and charging the battery pack

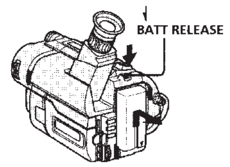
Установка и зарядка батарейного блока

To remove the battery pack

While pressing BATT RELEASE, slide the battery pack in the direction of the arrow.

Для снятия батарейного блока

Нажимая BATT RELEASE, передвиньте батарейный блок в направлении стрелки.



You can look at the demonstration of the functions available with this camcorder (p. 35).

Вы можете просмотреть демонстрацию функций, имеющихся в наличии у данной видеокамеры (стр. 35).

Inserting a cassette

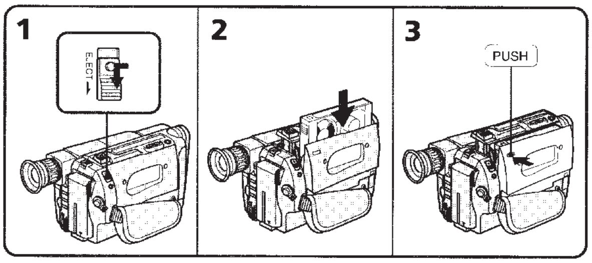
Вставка кассеты

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8** (CCD-TRV46E only).

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.
(2) Insert a cassette with the window facing out.
(3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.

Убедитесь, что источник питания установлен. Если Вы хотите выполнить запись в системе Hi8, то используйте Hi8-видеокассету **Hi8** (только CCD-TRV46E).

(1) Нажимая маленькую синюю кнопку на выключателе EJECT, сдвиньте его в направлении стрелки. Кассетный отсек автоматически поднимается и открывается.
(2) Вставьте кассету окошком, обращенным наружу.
(3) Закройте кассетный отсек путем нажатия знака "PUSH" на кассетном отсеке. Кассетный отсек автоматически опустится вниз.



To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

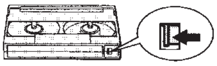
Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the ⧄ and ⏏ indicators flash, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Для выталкивания кассеты

Нажимая маленькую синюю кнопку на выключателе EJECT, сдвиньте его в направлении стрелки. Кассетный отсек автоматически поднимается и открывается.

Для предотвращения случайного стирания

Сдвиньте лепесток на кассете, чтобы было видно красную метку. Если Вы вставите кассету, на которой видна красная метка, и закроете кассетный отсек, зуммерный сигнал будет звучать в течение некоторого времени. Если Вы попытаетесь выполнить запись с выставленной красной меткой, то индикаторы ⧄ и ⏏ будут мигать в видоискателе и Вы не сможете произвести запись.
Для выполнения новой записи на такую ленту сдвиньте лепесток назад для закрывания красной метки.



Basic operations

Camera recording

Основные операции

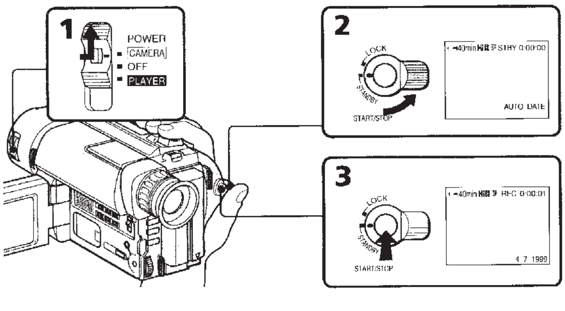
Запись с помощью видеокамеры

Make sure that the power source is installed and a cassette is inserted and that the START/STOP MODE switch inside the LCD panel is set to ⍓.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 68). The date is automatically recorded for 10 seconds after you start recording **(AUTO DATE feature)**. This feature works only once a day.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The red lamp lights up in the viewfinder when you record with the viewfinder. The camera recording/battery lamp located on the front of the camcorder also lights up.

Убедитесь, что источник питания установлен,кассета вставлена и переключатель START/STOP MODE внутри панели ЖКД установлен в положение ⍓.
Перед тем как Вы начнете запись одноразовых событий, Вы можете захотеть сделать пробную запись для подтверждения, что видеокамера работает правильно.
Если Вы используете видеокамеру в первый раз, то включите ее и установите дату и время на Ваше местное время перед началом записи (стр. 68) Дата автоматически будет записываться в течение 10 секунд после начала записи **(функция AUTO DATE)**.
Данная функция работает один раз в день.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER, установите его в положение CAMERA.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Нажмите START/STOP. Видеокамера начинает запись. Появляется индикатор "REC". Когда Вы осуществляете запись с помощью видоискателя, в видоискателе загорается красная лампочка. Лампочка записи камерой/батареи, расположенная на передней панели видеокамеры, также будет гореть.



Camera recording

Запись с помощью видеокамеры

To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

To finish recording [b]

Press START/STOP again. Turn STANDBY down to LOCK and set the POWER switch to OFF. Then, eject the cassette.

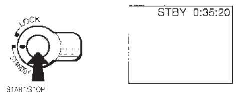
Для временной остановки записи [a]

Снова нажмите START/STOP. Индикатор "STBY" появляется в видоискателе **(режим готовности)**.

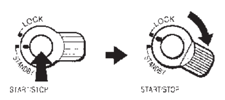
Для окончания записи [b]

Снова нажмите START/STOP. Поверните STANDBY вниз в положение LOCK и установите выключатель POWER в положение OFF. Затем вытолкните кассету.

[a]



[b]



Note

Be sure to remove the battery pack from the camcorder after using.

To focus the viewfinder lens

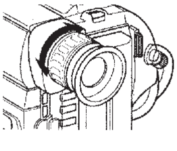
If you cannot see the indicators in the viewfinder clearly, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

Примечание

Не забудьте отсоединить батарейный блок от видеокамеры после импользования.

Для фокусировки объектива видоискателя

Если индикаторы в видоискателе Вам видны нечетко, выполните фокусировку обьектива видоискателя. Поверните кольцо регулировки объектива видоискателя так, чтобы индикаторы в видоискателе были четко сфокусированы.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically for saving battery power as well as for preventing the battery and tape from wearing down. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Примечание к режиму готовности

Если Вы оставляете видеокамеру в режиме готовности на 5 минут при вставленной кассете, видеокамера выключится автоматически в целях как для экономии заряда батарейного блока, так и для предотвращения износа иленты. Для восстановления режима готовности поверните STANDBY вниз, а затем снова вверх. Для начала записи нажмите START/STOP.

Note on recording
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. Passing the tape lead will ensure that you will not miss any start-up scenes when you play back the tape.

Notes on the tape counter
- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound
The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature
The clock is set at the factory to Sydney time for Australia and New Zealand models, to Tokyo time for the models sold in Japan, and to Hong Kong time for other models. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

Примечание к записи
Когда Вы начинаете запись от начала ленты, перематывайте ленту в течение 15 секунд перед началом фактической записи. Благодаря прогону вперед начального отрезка ленты Вы сможете быть уверены в том, что при ее воспроизведении Вы не обнаружите отсутствие в записи какой-либо из самых первых сцен.

Примечания к счетчику ленты
- Счетчик ленты указывает время записи или воспроизведения. Используйте его в качестве руководства. Существует отставание по времени на несколько секунд от фактического времени. Для установки счетчика на нуль нажмите COUNTER RESET.
- Если лента записана с чередованием режимов SP и LP, то счетчик ленты будет показывать неправильное время записи. Если Вы намереваетесь производить монтаж ленты с использованием счетчика ленты в качестве указателя, то выполняйте запись в одном и том же режиме (SP или LP).

Примечания к зуммерному звуковому сигналу
Зуммерный сигнал звучит, когда Вы работаете с видеокамерой. Несколько зуммерных сигналов также будет звучать в качестве предупреждения какого-нибудь необычного состояния видеокамеры. Заметьте, что зуммерный сигнал не записывается на ленту. Если Вы не хотите слушать зуммерный сигнал, то выберите "OFF" в системе меню.

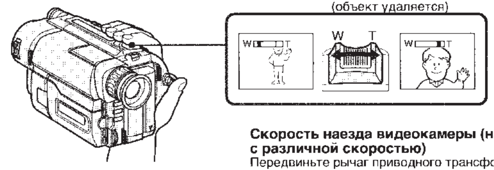
Примечание к функции AUTO DATE
Часы установлены на заводе на сиднейское время для моделей для Австралии и Новой Зеландии, на токийское время для моделей, продаваемых в Японии, и на гонконгское время для других моделей. Вы можете переустановить часы в системе меню. Вы можете изменить установки AUTO DATE путем выбора ON или OFF в системе меню. Функция AUTO DATE показывает дату автоматически один раз в день. Однако, дата может автоматически появится более одного раза в день, когда:
- Вы заново устанавливаете дату и время.
- Вы вытолкнули ленту и вставили ее снова.
- Вы остановили запись в пределах 10 секунд.
- Вы установили функцию AUTO DATE в системе меню на OFF, а затем снова на ON.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears further away)

Использование функции наезда видеокамеры

Наезд видеокамеры является техническим приемом записи, который позволяет Вам изменять размер объекта в кадре. Для более профессионального вида записей умеренно используйте функцию наезда видеокамеры.
Сторона "T": для телефото (объект приближается)
Сторона "W": для широкого угла съемки (объект удаляется)



Zooming speed (Variable speed zooming)
Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

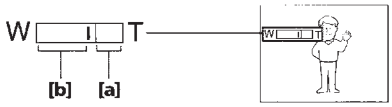
When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 80 cm away from the lens surface in the telephoto position, or about 1 cm away in the wide-angle position.

Notes on the digital zoom
- More than 18× zoom is performed digitally, but the picture quality deteriorates as you move the lever toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[a]** of the power zoom indicator shows the digital zooming zone, and the left side **[b]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[a]** zone disappears.

Скорость наезда видеокамеры (наезд с различной скоростью)
Передвиньте рычаг приводного трансфокатора немного для сравнительно медленного наезда видеокамеры; передвиньте его еще дальше для наезда на высокой скорости.

Когда Вы снимаете объект, используя наезд в режиме телефото
Если Вы не можете получить четкой фокусировки во время крайнего наезда в режиме телефото, перемещайте рычаг приводного трансфокатора в сторону "W" до тех пор, пока Вы не получите четкой фокусировки. Вы можете снимать объект, который по меньшей мере на 80 см удален от поверхности объектива в положении телефото, или удален приблизительно на 1 см в положении широкого угла.

Примечания к цифровому трансфокатору
- Посредством цифровой трансфокации осуществляется более чем 18-кратное увеличение, причем качество изображения ухудшается по мере смещения трансфокаторного регулятора в сторону "T". Если Вы не хотите использовать цифровой трансфокатор, установите функцию D ZOOM в системе меню на OFF.
- Правая сторона **[a]** индикатора приводного трансфокатора показывает зону цифровой трансфокации, а левая сторона **[b]** показывает зону оптической трансфокации. Если Вы установите функцию D ZOOM на OFF, то зона **[a]** исчезнет.



Selecting the START/STOP mode

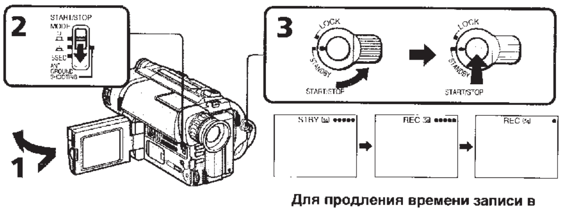
Your camcorder has three modes. These modes enable you to take a series of quick shots resulting in a lively video.
(1) While pressing OPEN, open the LCD panel.
(2) Set START/STOP MODE to the desired mode.
△ : Recording starts when you press START/STOP, and stops when you press it again (factory setting).
ANTI GROUND SHOOTING ⊥ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.
5SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.
(3) Turn STANDBY up to STANDBY and press START/STOP.
Recording starts.

If you selected 5SEC, the tape counter disappears and five dots appear. The dots disappear at a rate of one per second as illustrated below.

Выбор режима START/STOP

Ваша видеокамера имеет три режима. Эти режимы позволяют Вам снять серию коротких кадров, создавая в результате оживленную видеопрограмму.
(1) Нажимая OPEN, откройте панель ЖКД.
(2) Установите переключатель START/STOP MODE на желаемый режим.
△ : Запись начинается когда Вы нажимаете START/STOP и заканчивается, когда Вы нажимаете эту кнопку снова (Заводская установ ка).
ANTI GROUND SHOOTING ⊥ : Видеокамера производит запись только тогда, когда Вы держите START/STOP в нажатом состоянии, так что Вы можете избежать записи ненужных сцен.
5SEC: Когда Вы нажимаете START/STOP, видеокамера производит запись в течение 5 секунд, а затем останавливается автоматически.
(3) Поверните STANDBY вверх в положение STANDBY и нажмите START/STOP.
Запись начинается.

Если Вы выбрали 5SEC, счетчик ленты исчезает и появляются пять точек. Точки исчезают со скоростью по одной за секунду, как показано ниже на рисунке.



To extend the recording time in 5SEC mode
Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Notes on START/STOP mode
- If you have turned off the indicators on the LCD screen, the dots do not appear.
- You cannot use the fader function in the 5SEC or ANTI GROUND SHOOTING ⊥ mode.

Для продления времени записи в режиме 5SEC
Нажмите START/STOP снова до того, как все точки исчезнут. Запись продолжается еще в течение 5 секунд с момента нажатия START/STOP.

Примечания к режиму START/STOP
- Если Вы выключили индикаторы на экране ЖКД, точки появляться не будут.
- Вы не можете использовать функцию Fader в режиме 5 SEC или ANTI GROUND SHOOTING ⊥ .

Shooting with the LCD screen

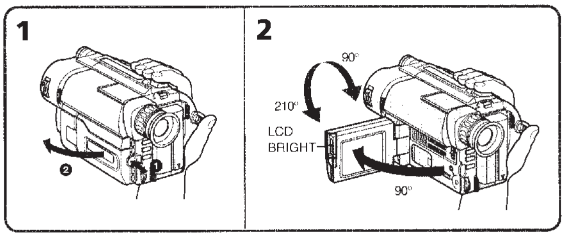
You can also record the picture while looking at the LCD screen.
When using the LCD screen, the viewfinder turns off automatically. You cannot monitor the sound from the speaker during recording.
(1) While pressing OPEN, open the LCD panel.
(2) Adjust the angle of the LCD panel.
The LCD panel moves about 90 degrees to this side and about 210 degrees to the other side.
To adjust the brightness of the LCD screen, press LCD BRIGHT.
+ side: to brighten the LCD screen
– side: to dim the LCD screen

The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.

Съемка с использованием экрана ЖКД

Вы можете также производить запись изображения, глядя на экран ЖКД.
При использовании экрана ЖКД экран видоискателя выключается автоматически.
Вы не можете слышать звук от громкоговорителя во время записи.
(1) Нажимая OPEN, откройте панель ЖКД.
(2) Отрегулируйте угол панели ЖКД.
Панель ЖКД перемещается приблизительно на 90 градусов в эту сторону и приблизительно на 210 градусов в другую сторону.
Для регулировки яркости экрана ЖКД нажмите LCD BRIGHT.
Сторону +: для получения более яркого экрана ЖКД
Сторону –: Для получения более тусклого экрана ЖКД

Срок службы заряда батарейного блока будет длинее, когда панель ЖКД закрыта. Используйте видоискатель вместо экрана ЖКД для экономии заряда батарейного блока.



Backlighting the LCD screen
If the LCD screen is insufficiently illuminated even after adjusting LCD BRIGHT, select LCD B. L. in the menu system and set to BRIGHT. You can select LCD B. L. only while using the battery pack as a power source.

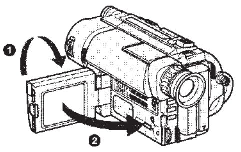
Задняя подсветка экрана ЖКД
Если экран ЖКД недостаточно освещен даже после регулировки LCD BRIGHT, то выберите LCD B. L. в системе меню и установите BRIGHT. Вы можете выбрать LCD B. L. только при использовании батарейного блока в качестве источника питания.

Camera recording

Notes on the LCD panel

- When closing the LCD panel, turn it vertically until it clicks **[a]**.
- When turning the LCD panel, turn it always vertically; otherwise, the camcorder body may be damaged or the LCD panel may not close properly **[b]**.
- Close the LCD panel completely when not in use.

[a]



Letting the subject monitor the shot (Mirror mode)

You can turn the LCD panel over so that it faces the other way and you can let the subject monitor the shot while shooting with the viewfinder.

Turn the LCD panel vertically first until it clicks, then turn it over. The ☺ indicator appears on the LCD screen **(Mirror mode)** and the date and remaining tape indicators disappear.

To cancel mirror mode

Turn the LCD panel back toward the viewfinder.

Notes on mirror mode

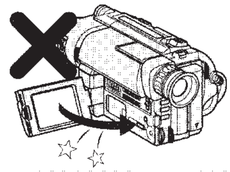
- The picture on the LCD looks as a mirror-image while recording in mirror mode. The STBY indicator appears as **II●** and REC as **●**. The other indicators may not appear in mirror mode.
- While recording in mirror mode, you cannot operate the following buttons: TITLE, DATE, TIME and MENU.
- The date appears in reverse when the AUTO DATE feature is turned on. When recorded, it will be normal.

Запись с помощью видеокамеры

Примечания к панели ЖКД

- При закрывании панели ЖКД поворачивайте ее вертикально до тех пор, пока она не защелкнется **[a]**.
- При вращении панели ЖКД двигайте ее всегда вертикально; в противном случае корпус видеокамеры может быть поврежден или панель ЖКД может быть закрыта неправильно **[b]**.
- Полностью закройте панель ЖКД, когда она не используется.

[b]



Возможность для снимаемого человека наблюдать съемку (зеркальный режим)

Вы можете перевернуть панель ЖКД, так, что она будет обращена в другую сторону и Вы позволите снимаемому человеку наблюдать съемку, контролируя запись в видоискателе.

Сперва поворачивайте панель ЖКД, держа ее вертикально, пока она не защелкнется, а затем переверните ее. Индикатор ☺ появится на экране ЖКД **(зеркальный режим)** и индикаторы даты и оставшейся ленты исчезнут.

Для отмены зеркального режима

Поверните панель ЖКД назад в направлении видоискателя.

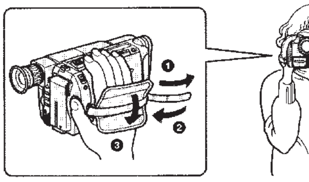
Примечания к зеркальному режиму

- Изображение на экране ЖКД появляется в зеркальном отображении во время записи в зеркальном режиме. Индикатор STBY появляется в виде **II●**, а REC в виде **●**. Другие индикаторы появляются, как зеркальные отображения. Некоторые индикаторы могут не появляться в зеркальном режиме.
- Во время записи в зеркальном режиме Вы не можете использовать следующие кнопки: TITLE, DATE, TIME и MENU.
- Дата появляется в обратном порядке, когда включена функция AUTO DATE. После записи она будет выглядеть нормально.

Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb.



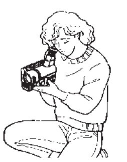
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position **[a]**.
- You can also record in a low position or even in a high position using the LCD panel **[b]**.
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

Советы для лучшей съемки

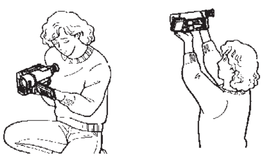
Для кадров при удержании видеокамеры в руках Вы получите лучшие результаты, если будете держать видеокамеру в соответствии со следующими рекомендациями:

- Держите видеокамеру крепко и закрепите ее с помощью ременного захвата так, чтобы Вы легко могли манипулировать регуляторами с помощью большого пальца.
- Прижмите правый локоть к боку.
- Расположите Вашу левую руку под видеокамерой для ее поддержки. Ни в коем случае не трогайте встроенный микрофон.
- Надежно прижмите Ваш глаз к окуляру видоискателя.
- Используйте визирную рамку видоискателя в качестве руководства для определения горизонтального плана.
- Вы также можете записывать из низкого положения для получения интересного угла записи. Поднимите видоискатель вверх для записи из низкого положения **[a]**.
- Вы также можете записывать из низкого положения или даже из высокго положения с использованием панели ЖКД **[b]**.
- Когда Вы используете экран ЖКД на улице под прямым солнечным светом, то изображение на экране ЖКД может быть трудным для просмотра. Если это случится, то мы рекомендуем Вам использовать видоискатель.

[a]



[b]



Hints for better shooting

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm. Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder and the LCD

- Do not pick up the camcorder by the viewfinder or by the LCD panel **[c]**.
- Do not place the camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or the LCD screen may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

Советы для лучшей съемки

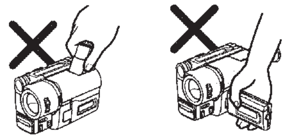
Располагайте видеокамеру на плоской поверхности или используйте треногу

Постарайтесь расположить видеокамеру сверху на столе или любой другой плоской поверхности подходящей высоты. Если у Вас есть тренога для фотоаппарата, Вы также можете использовать ее и для видеокамеры. При прикреплении треноги не фирмы Sony убедитесь, что длина винта треноги менее 6,5 мм. В противном случае винт может повредить внутренние части видеокамеры.

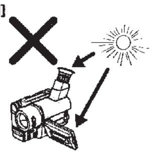
Предосторожности к панели ЖКД и видоискателю

- Не поднимайте видеокамеру за видоискатель или панель ЖКД **[c]**.
- Не располагайте видеокамеру так, чтобы видоискатель или экран ЖКД были направлены в сторону солнца, поскольку это может привести к повреждению их внутренних частей. Проявляйте осторожность, располагая видеокамеру под солнечными лучами или возле окна **[d]**.

[c]



[d]



Checking the recorded picture

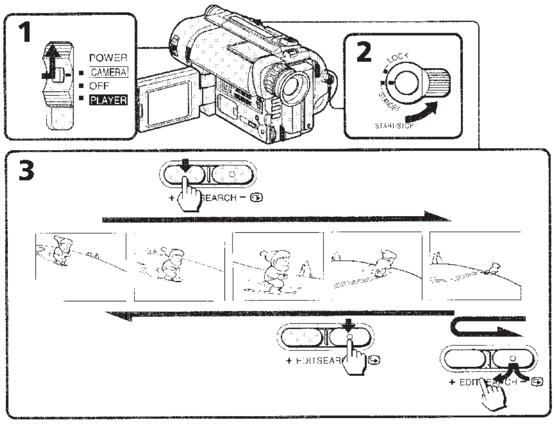
Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder or on the LCD screen.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.
You can monitor the sound from the speaker or an earphone.
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.

Проверка записанного изображения

Используя EDITSEARCH, Вы можете пересмотреть последнюю записанную сцену или проверить записанное изображение через видоискатель или на экране ЖКД.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER, установите его в положение CAMERA.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) На мгновение нажмите сторону – (⊜) кнопки EDITSEARCH; последние несколько секунд записанной части будут воспроизведены **(пересмотр записи)**.
Вы можете контролировать звук через встроенный громкоговоритель или наушники.
Держите нажатой сторону – кнопки EDITSEARCH до тех пор, пока видеокамера не вернется к желаемой сцене. Последняя записанная часть будет воспроизведена. Для продвижения вперед держите нажатой сторону + **(монтажный поиск)**.



Checking the recorded picture

To stop playback
Release EDITSEARCH.

To go back to the last recorded point after edit search
Press END SEARCH. The last recorded point is played back for about 5 seconds (10 seconds in LP mode) and stops. Note that this function does not work once you eject the cassette after you recorded on the tape.

To begin re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Проверка записанного изображения

Для остановки воспроизведения
Отпустите EDITSEARCH.

Для возвращения к последней записанной точке после выполнения монтажного поиска
Нажмите END SEARCH. Воспроизведение последнего записанного места будет выполнено приблизительно в течение 5 секунд (10 секунд в режиме LP) и остановлено. Заметьте, что данная функция не работает, если Вы вытолкнете кассету после выполнения записи на ленте.

Снова для начала записи
Нажмите START/STOP. Запись начинается от точки, где Вы отпустили EDITSEARCH. При условии, что Вы не вытолкнете кассету, переход между последней сценой, которую Вы записали, и следующей сценой, которую Вы записываете, будет плавным.

Playing back a tape

You can monitor the playback picture on the LCD screen.

(1) While pressing the small green button on the POWER switch, set it to PLAYER.
(2) Insert the recorded tape with the window facing out.
(3) While pressing OPEN, open the LCD panel. Adjust the angle of the LCD panel or the brightness of the LCD screen if necessary.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶ to start playback.
(6) Adjust the volume using VOLUME and adjust the brightness of the LCD screen using LCD BRIGHT.

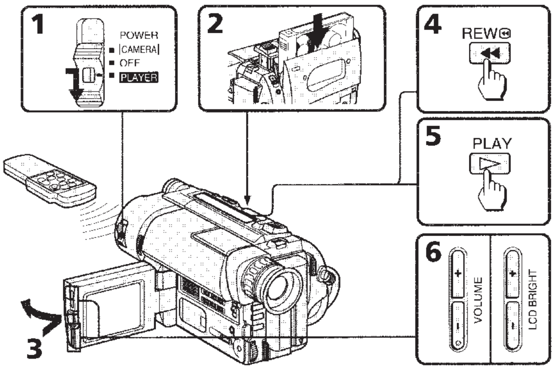
You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.

Воспроизведение ленты

Вы можете просматривать изображение на экране ЖКД.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER , установите его в положение PLAYER.
(2) Вставьте записанную ленту окошком, обращенным наружу.
(3) Нажимая OPEN, откройте панель ЖКД. Отрегулируйте угол панели ЖКД или яркость экрана ЖКД, если это требуется.
(4) Нажмите ◀◀ для ускоренной перемотки ленты назад.
(5) Нажмите ▶ для начала воспроизведения.
(6) Отрегулируйте громкость с использованием VOLUME и отрегулируйте яркость экрана ЖКД с использованием LCD BRIGHT.

Вы можете также просмотреть изображение на экране телевизора после подсоединения видеокамеры к телевизору или КВМ.



To stop playback, press ■.
To rewind the tape, press ◀◀.
To fast-forward the tape rapidly, press ▶▶.

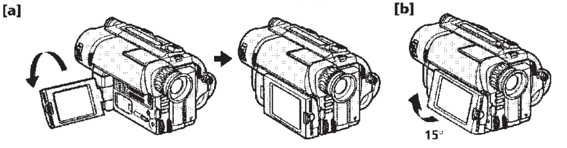
Для остановки воспроизведения нажмите ■.
Для ускоренной перемотки ленты назад нажмите ◀◀.
Для ускоренной перемотки ленты вперед нажмите ▶▶.

When monitoring on the LCD screen

You can turn the LCD panel over and move back to the camcorder with the LCD screen facing out **[a]**. You can adjust the angle of the LCD screen by turning the LCD screen up to 15 degrees **[b]**.

При просмотре на экране ЖКД

Вы можете перевернуть панель ЖКД и придвинуть ее назад к видеокамере с экраном ЖКД, обращенным наружу **[a]**. Вы можете отрегулировать угол экрана ЖКД, поворачивая экран ЖКД вверх до 15 градусов **[b]**.



Using the remote commander
– CCD-TRV27E/TRV46E only

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the R6 (size AA) batteries.

Note on DISPLAY button
Press DISPLAY to display the screen indicators on the LCD screen. To erase the indicators, press DISPLAY again. If the POWER switch is set to CAMERA, you can erase the indicator by pressing DISPLAY.

Using an earphone
Connect an earphone (not supplied) to the ⓦ jack. You can adjust the volume using VOLUME. When you use an earphone, the sound does not come from the speaker.

To view the playback picture in the viewfinder
Close the LCD panel. The viewfinder turns on automatically. When using the viewfinder, you can monitor sound only by using an earphone. To view on the LCD screen again, open the LCD panel. The viewfinder turns off automatically.

Использование пульта дистанционного управления
– Только CCD-TRV27E/TRV46E

Вы можете управлять воспроизведением с помощью прилагаемого пульта дистанционного управления. Перед использованием пульта дистанционного управления вставьте в него батарейки R6 (размером AA).

Примечание к кнопке DISPLAY.
Нажмите DISPLAY для отображения экранных индикаторов на экране ЖКД. Для стирания индикаторов нажмите DISPLAY снова. Если выключатель POWER установлен в положение CAMERA, Вы можете стереть индикаторы путем нажатия DISPLAY.

Использование наушников
Подсоедините наушники (не прилагаются) к гнезду ⓦ. Громкость Вы можете регулировать с помощью VOLUME. Когда Вы пользуетесь наушниками, из громкоговорителя звук не поступает.

Для воспроизведения изображения в видоискателе
Закройте панель ЖКД. Видоискатель включится автоматически. При использовании видоискателя Вы можете прослушивать звук только с помощью наушников.
Для просмотра на экране ЖКД снова откройте панель ЖКД. Видоискатель выключится автоматически.

Note on the lens cover
The lens cover does not open when the POWER switch is set to PLAYER. Do not open the lens cover manually. It may cause malfunction.

Various playback modes

You can enjoy clear pictures on the LCD screen during still, slow and picture search.
(Crystal-clear still/slow/picture search)

To view a still picture (playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To locate a scene (picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▶.

To view the picture at 1/5 speed (slow playback)
–CCD-TRV27E/TRV46E only
Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback
- Noise may appear when you use the crystal-clear still/slow/picture search function to play back the tape recorded in LP mode.
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
- Horizontal noise appears at the centre, or top and bottom of the screen when you play back a tape in reverse. This is normal.
- You can play back the tapes recorded in the Hi8 video system on the standard 8 mm camcorder (CCD-TRV16E/TRV27E only).

Примечание к крышке объектива
Крышка объектива не открывается, когда выключатель POWER установлен в положение PLAYER. Не открывайте крышку объектива вручную. Это может привести к неисправности.

Различные режимы воспроизведения

Вы можете наслаждаться четким изображением при просмотре на экране ЖКД стоп-кадра, замедленного воспроизведения и поиска изображения.
(Кристалльно чистые стоп-кадр/замедленное воспроизведение/поиск изображения)

Для просмотра неподвижного изображения (пауза воспроизведения)
Нажмите ❚❚ во время воспроизведения. Для восстановления воспроизведения нажмите ❚❚ или ▶.

Для обнаружения фрагмента (поиск изображения)
Держите нажатой кнопку ◀◀ или ▶▶ во время воспроизведения. Для восстановления нормального воспроизведения отпустите кнопку.

Для контроля изображения на высокой скорости во время ускоренной перемотки ленты вперед или назад (поиск методом прогона)
Держите нажатой кнопку ◀◀ во время перемотки ленты назад или кнопку ▶▶ во время перемотки ленты вперед. Для восстановления нормального воспроизведения нажмите ▶.

Для просмотра изображения на 1/5 скорости (замедленное воспроизведение)
– Только CCD-TRV27E/TRV46E
Нажмите ❚▶ на пульте дистанционного управления во время воспроизведения. Для восстановления нормального воспроизведения нажмите ▶. Если замедленное воспроизведение продолжается приблизительно в течение 1 минуты, аппарат переключится на нормальную скорость автоматически.

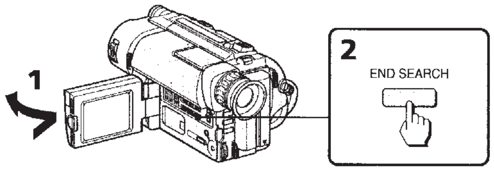
Примечания к воспроизведению
- Помехи могут появляться, когда Вы используете функцию кристалльно чистого стоп-кадра/замедленного воспроизведения/поиска изображения при воспроизведении ленты, записанной в режиме LP.
- “Тянучки” появляются и звук будет приглушен в различных режимах воспроизведения.
- Если режим паузы воспроизведения продолжается в течение 5 минут, видеокамера автоматически войдет в режим останова.
- При воспроизведении в режиме реверса в центре, вверху или внизу экрана появляется горизонтальный шум. Это нормальное явление.
- Вы можете воспроизводить пленки, записанные в видеосистеме Hi8 на стандартной 8-миллиметровой видеокамере (только для CCD-TRV16E/TRV27E).

Searching for the end of the picture

Поиск конца изображения

You can go to the end of the recorded portion after you record and play back the tape to make the transition between the last scene you recorded and the next scene smooth. The tape starts rewinding or fast-forwarding and the last 5 seconds (10 seconds in LP mode) of the recorded portion play back. Then the tape stops at the end of the recorded picture **(End Search).**
Note that the End Search function does not work once you eject the cassette after you have recorded on the tape.
(1) While pressing OPEN, open the LCD panel.
(2) Press END SEARCH.
This function works when the POWER switch is set to either CAMERA or PLAYER.

Вы можете перейти к концу записанной части после записи и воспроизведения ленты для выполнения плавного перехода между последней сценой, которую Вы записали, и последующей сценой. Лента начинает перематываться назад или вперед, и последние 5 секунд (10 секунд в режиме LP) записанной части будут воспроизведены. Затем лента остановится в конце записанного изображения **(поиск конца).**
Заметьте, что функция поиска конца не работает, если Вы вытолкнули кассету после выполнения записи на ленте.
(1) Нажимая OPEN, откройте панель ЖКД
(2) Нажмите END SEARCH.
Данная функция работает, когда выключатель POWER установлен либо в положение CAMERA, либо в положение PLAYER.



If you start recording after using END SEARCH
Occasionally, the transition between the last scene you recorded and the next scene may not be smooth.

Если Вы начали запись после использования END SEARCH
Изредка переход между последней сценой, которую Вы записали, и последующей сценой может не быть плавным.

Advanced operations

Using alternative power sources

Усовершенствованные операции

Использование альтерна-тивных источников питания

You can choose any of the following power sources for your camcorder: battery pack, the mains and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	Mains	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F330 (supplied), NP-F530, NP-F550, NP-F730, NP-F750, NP-F930, NP-F950
In the car	12 V or 24 V car battery	Sony DC adaptor/ charger (not supplied)

Notes on power sources
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
- The DC IN jack has source priority. This means that the battery pack cannot supply any power if the mains lead is connected to the DC IN jack, even when the mains lead is not plugged into the mains.

Вы можете выбрать любой из следующих источников питания для Вашей видеокамеры: батарейный блок, электрическую сеть и 12/24 В автомобильный аккумулятор. Выберите подходящий источник питания в зависимости от того, где Вы хотите использовать Вашу видеокамеру.

Место	Источник питания	Используемые принадлежности
В помещении	Электрическая сеть	Прилагаемый сетевой адаптер перем. тока
На улице	Батарейный блок	Батарейный блок NP-F330 (прилагается), NP-F530, NP-F550, NP-F730, NP-F750, NP-F930, NP-F950
В автомобиле	12 В или 24 В автомобильный аккумулятор	Зарядное устройство/ Адаптер пост. тока Sony (Не прилагается)

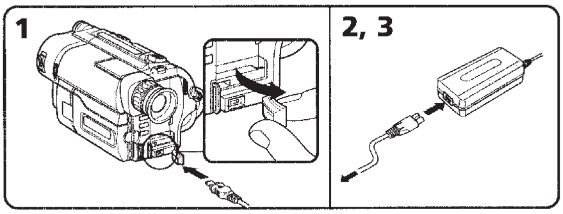
Примечания по источникам питания
- Отсоединение источника питания или снятие батарейного блока во время записи или воспроизведения может повредить вставленную ленту.
- Гнездо DC IN обладает приоритетом в качестве источника питания. Это означает, что батарейный блок не может подавать питание, если сетевой шнур подсоединен к гнезду DC IN, даже когда сетевой шнур не включен в стенную розетку.

Using the mains

(1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on the camcorder.
(2) Connect the mains lead to the AC power adaptor.
(3) Connect the mains lead to the mains.

Использование электрической сети

(1) Откройте крышку гнезда DC IN и подсоедините сетевой адаптер переменного тока к гнезду DC IN на видеокамере.
(2) Подсоедините сетевой провод к сетевому адаптеру переменного тока.
(3) Подсоедините сетевой провод к сети.



WARNING
The mains lead must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the mains, even if the set itself has been turned off.

Note
Keep the AC power adaptor away from the camcorder if the picture is disturbed.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

ПРЕДУПРЕЖДЕНИЕ
Сетевой провод должен быть заменен только в мастерской квалифицированного обслуживания.

ПРЕДОСТЕРЕЖЕНИЕ
Аппарат не отключается от источника питания перем. тока (электрической сети) до тех пор, пока он подключен к электрической сети, даже если сам аппарат выключен.

Примечание
Держите сетевой адаптер переменного тока подальше от видеокамеры, если изображение содержит помехи.

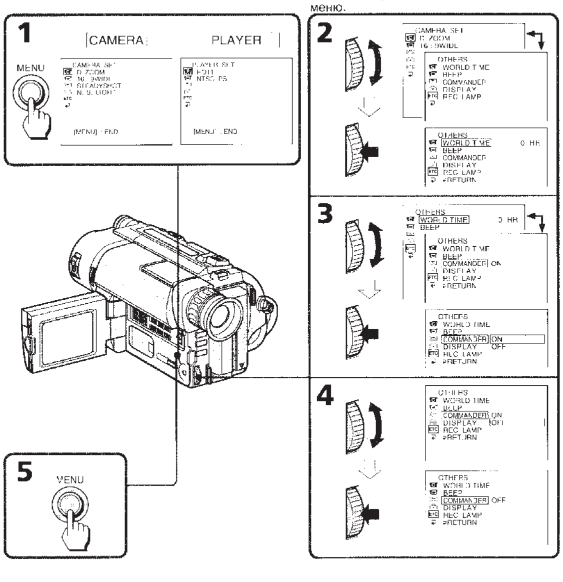
Настоящий знак указывает, что данная продукция является подлинной принадлежностью видеопродукции Sony.
Если Вы покупаете видеопродукцию Sony, то мы рекомендуем, чтобы Вы покупали принадлежности, помеченные знаком "GENUINE VIDEO ACCESSORIES".

Changing the mode settings

Изменение установок режимов

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.
(1) Press MENU to display the menu.
(2) Turn the control dial to select the desired icon in the left side of the menu, then press the dial to set.
(3) Turn the control dial to select the desired item, then press the dial to set.
(4) Turn the control dial to select the desired mode, and press the dial to set. If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select ⮐ RETURN and press the dial, then repeat steps from 2 to 4.
(5) Press MENU or select ⮐ icon to erase the menu display.

Вы можете изменять установки режимов в системе меню для большего наслаждения особенностями и функциями видеокамеры.
(1) Нажмите MENU для отображения меню.
(2) Вращая регулировочный диск, выберите нужную пиктограмму в левой части меню, а затем нажатием диска занесите ее в память.
(3) Вращая регулировочный диск, выберите нужный параметр, а затем нажатием диска занесите его в память.
(4) Вращая регулировочный диск, выберите нужный режим, а затем нажатием диска занесите его в память. Если Вы хотите изменить другие режимы, повторите пункты 3 и 4. Если Вы хотите изменить другие установки выберите ⮐ RETURN и нажмите диск, а затем повторите пункты 2 – 4.
(5) Нажмите MENU или выберите пиктограмму ⮐ для стирания дисплея меню.



Note on the menu display
Depending on the model of your camcorder, the menu display may be different from that in this illustration.

Notes on changing the mode setting
- Menu items differ depending on the setting of the POWER switch to PLAYER or CAMERA.
- When you let the subject monitor the shot (mirror mode), the menu display does not appear.

Selecting the mode setting of each item

Items for both CAMERA and PLAYER modes

LCD B. L.* <BRT NORMAL/BRIGHT>
- Normally select BRT NORMAL.
- Select BRIGHT when the LCD screen is dark.

When you select BRIGHT, battery life is about 10 percent shorter during recording.
When you use the power sources other than the battery pack, BRIGHT is automatically selected, and LCD B.L. is not displayed in the menu.

LCD COLOUR*
Select this item to adjust the colour on the LCD screen.

REMAIN* <AUTO/ON>
- Select AUTO when you want to display the remaining tape bar:
  for about 8 seconds after the camcorder is turned on and calculates the remainder of the tape.
  – for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
  for the period of tape rewinding, forwarding or picture search in PLAYER mode.
  – for about 8 seconds after DISPLAY is pressed to display the screen indicators.
  – for about 8 seconds after ▶ is pressed in PLAYER mode.
- Select ON to always display the remaining tape indicator.

Примечание к дисплею меню
В зависимости от модели Вашей видеокамеры дисплей меню может отличаться от описанного в данной инструкции по эксплуатации.

Примечания к изменению установок режимов
- Установки меню отличаются в зависимости от нахождения выключателя POWER в положении PLAYER или CAMERA.
- Когда Вы даете снимаемому человеку наблюдать съемку (зеркальный режим) дисплей меню появляться не будет.

Выбор режима каждой установки

Установки для режимов и CAMERA и PLAYER

LCD B.L.* <BRT NORMAL/BRIGHT>
- Обычно выбирайте BRT NORMAL.
- Выбирайте BRIGHT, когда экран ЖКД темный.

При выборе функции BRIGHT срок работы батареи в режиме записи сокращается примерно на 10%.
Когда Вы используете другие источники питания помимо батарейного блока, функция BRIGHT выбираетсяавтоматически, и функция LCD B.L. в меню не показывается.

LCD COLOUR*
Выберите данную установку для регулировки цвета на экране ЖКД.

REMAIN* <AUTO/ON>
- Выберите AUTO, если Вы хотите отобразить шкалу оставшейся ленты:
  – приблизительно на 8 секунд после включения видеокамеры и вычисления остатка ленты.
  – приблизительно на 8 секунд после установки кассеты и вычисления остатка ленты.
  – на период ускоренной перемотки ленты назад, вперед или поиска изображения в режиме PLAYER.
  – приблизительно на 8 секунд после нажатия кнопки DISPLAY для отображения экранной индикации.
  – приблизительно на 8 секунд после нажатия ▶ в режиме PLAYER.
- Выберите ON для постоянного отображения индикатора оставшейся ленты.

LTR SIZE* <NORMAL/2x>
- Normally select NORMAL.
- Select 2x to display selected menu item by twice size of normal.

ETC BEEP* <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

ETC COMMANDER <ON/OFF> (CCD-TRV27E/TRV46E only)
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

ETC DISPLAY* <LCD or V-OUT/LCD>
- Normally select LCD. The display appears on the LCD screen.
- Select V-OUT/LCD to show the display both on the TV screen and LCD screen.

Items for CAMERA mode only

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to prevent the deterioration of the picture quality. The camcorder goes back to optical zoom.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Normally select OFF.
- Select CINEMA to record in CINEMA mode.
- Select 16:9FULL to record in 16:9FULL mode.

STEADYSHOT* <ON/OFF> (CCD-TRV46E only)
- Normally select ON.
- Select OFF to release the SteadyShot function.

N.S.LIGHT* <ON/OFF>
- Normally select ON.
- Select OFF to not use the NightShot Light function.

LTR SIZE* <NORMAL/2x>
- Обычно выбирайте NORMAL.
- Выберите 2x для отображения выбранной установки меню в два раз больше нормального размера.

ETC BEEP* <ON/OFF>
- Выберите ON, чтобы зуммерные сигналы звучали, когда Вы начинаете/останавливаете запись и т.д.
- Выберите OFF, если Вы не хотите слышать зуммерный звуковой сигнал.

ETC COMMANDER <ON/OFF> (Только CCD-TRV27E/TRV46E)
- Выбирайте ON при использовании прилагаемого к видеокамере пульта дистанционного управления.
- Выберите OFF, если пульт дистанционного управления не используется.

ETC DISPLAY* <LCD или V-OUT/LCD>
- Обычно выбирайте LCD. Дисплей появляется на экране ЖКД.
- Выберите V-OUT/LCD для отображения индикаторов и на экране ЖКД и на экране телевизора.

Установки только для режима CAMERA

D ZOOM * <ON/OFF>
- Выберите ON для включения цифровой трансфокации.
- Выберите OFF, чтобы избежать ухудшения качества изображения. Видеокамера вновь переходит в режим оптической трансфокации.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Обычно выбирайте OFF.
- Выберите CINEMA для записи в режиме CINEMA.
- Выберите 16:9FULL для записи в режиме 16:9FULL.

STEADYSHOT* <ON/OFF> (Только CCD-TRV46E)
- Обычно выбирайте ON.
- Выбирайте OFF для отключения функции устойчивой съемки.

N.S.LIGHT* <ON/OFF>
- Обычно выбирайте ON.
- Выберите OFF при неиспользовании функции освещения ночной съемки.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

When a tape recorded on this camcorder in LP mode is played back on other types of 8 mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.

Note on the REC mode
– CCD-TRV46E only
When you record tapes in LP mode, the picture is not recorded in the Hi8 system, but in the standard 8 mm system.

ORC TO SET*
Select this item to automatically adjust the recording condition to get the best possible recording.
If you have already performed this function, "ORC ON" is displayed.
ORC stands for "Optimizing the Recording Condition."

CLOCK SET*
Reset the date or time.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
  Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears in the viewfinder or on the LCD screen and you cannot select DEMO MODE.

REC MODE* <SP/LP>
- Выберите SP при записи в режиме SP (стандартного воспроизведения).
- Выберите LP при записи в режиме LP (удлиненного воспроизведения).

Когда лента, записанная на данной видеокамере в режиме LP, воспроизводится на других типах 8 мм видеокамер или КВМ, качество воспроизведения может быть не таким хорошим, как при воспроизведении на данной видеокамере.

Примечание о режиме REC
– Только CCD-TRV46E
При записи на магнитную ленту в режиме LP изображение записывается не в системе Hi8, а в стандартной 8-миллиметровой системе.

ORC TO SET*
Выберите данную установку для автоматической регулировки условий записи для получения по возможности наилучшей записи.
Если Вы уже задействовали эту функцию, то будет отображаться "ORC ON".
Английское сокращение ORC означает "оптимизация условий записи".

CLOCK SET*
Выберите эту установку для переустановки даты или времени.

AUTO DATE* <ON/OFF>
- Выберите ON для записи даты в течение 10 секунд после начала записи.
- Выберите OFF, чтобы дата не записывалась.

DEMO MODE* <ON/OFF>
- Выберит ON для появления демонстрации.
- Выберите OFF для отключения функции демонстрации.

Примечания к DEMO MODE
- DEMO MODE устанавливается на заводе на STBY (готовность) и демонстрация начинается приблизительно через 10 минут после установки выключателя POWER в положение CAMERA без вставки кассеты.
  Заметьте, что Вы не можете выбирать STBY для режима DEMO MODE в системе меню.
- Вы не можете выбрать DEMO MODE, если кассета вставлена в видеокамеру.
- Если Вы вставите кассету во время демонстрации, то демонстрация прекращается. Вы можете начать запись, как обычно. DEMO MODE автоматически возращается к STBY.
- Если функция NIGHTSHOT установлена во включенное положение ON, в видоискателе или на экране ЖКД появится индикация "NIGHTSHOT" и вы не сможете выбрать DEMO MODE.

To look at the demonstration at once
Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin.
When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

ETC WORLD TIME*
Select this item to set the clock by a time difference.

ETC REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Items for PLAYER mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

The EDIT setting works only during playback.

NTSC PB* <ON PAL TV/NTSC 4.43>
- Normally select ON PAL TV.
- Select NTSC 4.43 if your TV has the NTSC 4.43 mode when playing back a tape recorded in the NTSC colour system.
  When you play back on a Multi System TV, select the best mode while watching the picture on the TV.

* These settings are retained even when the battery pack is removed, as long as the lithium battery is in place.

Для безотлагательного просмотра демонстрации
Вытолкните кассету, если она вставлена. Выберите ON в установке DEMO MODE и сотрите дисплей меню. Начинается демонстрация.
Когды Вы выключите видеокамеру DEMO MODE автоматически возвращается к STBY.

ETC WORLD TIME*
Выберите данную функцию для установки часов по разнице во времени.

ETC REC LAMP* <ON/OFF>
- Выберите OFF, если Вы не хотите, чтобы загоралась лампочка записи камерой/батареи на передней панели аппарата.
- Обычно выбирайте ON.

Установки только для режима PLAYER

EDIT <ON/OFF>
- Выберите ON для сведения помех к минимуму во время монтажа.
- Обычно выбирайте OFF.

Функция EDIT применима только в режиме воспроизведения.

NTSC PB* <ON PAL TV/NTSC 4.43>
- Обычно вибирайте ON PAL TV.
- Выберите NTSC 4.43, если в Вашем телевизоре имеется режим NTSC 4.43 во время воспроизведения ленты, записанной в системе цветного телевидения NTSC.
  Если Вы воспроизводите на мультисистемном телевизоре, то выберите наилучший режим во время просмотра изображения на экране телевизора.

* Эти установки остаются в силе даже при снятии батарейного блока до тех пор, пока на месте литиевая батарейка.

Shooting with backlighting

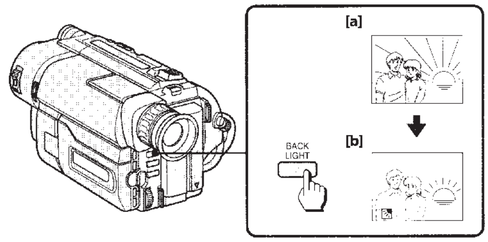
Съемка с задней подсветкой

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▨ indicator appears in the viewfinder or on the LCD screen.

Когда Вы снимаете объект с источником света позади объекта или объект на освещенном фоне, используйте функцию BACK LIGHT.

Нажмите BACK LIGHT. Индикатор ▨ появляется в видоискателе или на экране ЖКД.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

[a] Объект является слишком темным из-за задней подсветки.
[b] Объект становится ярким с помощью компенсации задней подсветки.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▨ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

To make a fine adjustment

You can adjust the exposure manually. However, when you adjust the exposure manually, you cannot operate the BACK LIGHT function.

После съемки

Не забудьте отключить состояние этой регулировки путем нажатия BACK LIGHT снова. Индикатор ▨ исчезнет. В противном случае изображение будет слишком ярким в условиях нормального освещения.

Данная функция является эффективной в следующих условиях:

- Для объекта, расположенного рядом с источником света или зеркалом. отражающим свет.
- Белый объект на белом фоне. Особенно, когда Вы снимаете человека в блестящей одежде из шелка или синтетического волокна, его или ее лицо может стать темным, если Вы не будете использовать данную функцию.

Для выполнения точной регулировки

Вы можете отрегулировать экспозицию вручную. Однако при ручной регулировке экспозиции функция BACK LIGHT работать не будет.

Using the FADER function

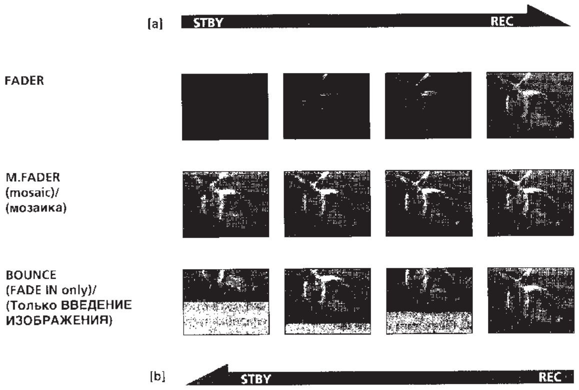
Использование фунции FADER

Selecting the fader function

You can fade in or out to give your recording a professional appearance.
When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.

Выбор функции введения/выведения изображения

Вы можете плавно вводить или выводить изображение, придавая Вашей записи профессиональный вид.
Если изображение постепенно вводится, звук постепенно увеличивается. Если изображение постепенно выводится, звук постепенно уменьшается.


[a]
STBY
REC
FADER
M.FADER (mosaic)/ (мозаика)
BOUNCE (FADE IN only)/ (Только ВВЕДЕНИЕ ИЗОБРАЖЕНИЯ)
[b]
STBY
REC

MONOTONE
When fading in, the picture gradually changes from black and white to colour.
When fading out , the picture gradually changes from colour to black and white.

Note
When D ZOOM in the menu system is set to ON, you cannot use the BOUNCE function.

MONOTONE
При введении изображение постепенно изменяется от черно-белого до цветного.
При выведении изображение постепенно изменяется от цветного до черно-белого.

Примечание
Вы не можете пользоваться функцией BOUNCE, когда функция D ZOOM установлена в меню на ON.

Using the fader function

When fading in [a]

(1) While the camcorder is in Standby mode, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

The fading mode selected last is indicated first of all.

Использование функции введения/выведения изображения

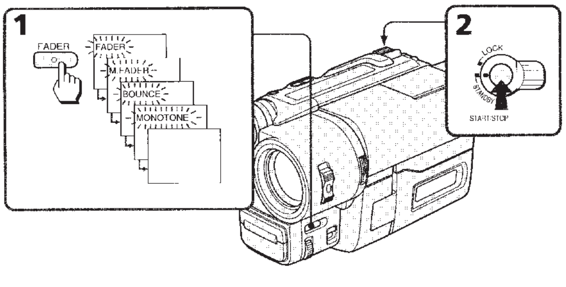
Для введения изображения [a]

(1) Когда видеокамера находится в режиме готовности нажимайте FADER до тех пор, пока желаемый индикатор введения/выведения не начнет мигать.
(2) Нажмите START/STOP для начала записи. Индикатор введения/выведения перестает мигать.

Для выведения изображения [b]

(1) Во время записи нажимайте FADER до тех пор, пока желаемый индикатор введения/выведения не начнет мигать.
(2) Нажмите START/STOP для остановки записи. Индикатор введения/выведения перестает мигать и запись останавливается.

Режим введения/выведения, который был выбран последним, указывается прежде всего.



When you use the BOUNCE function

Set D ZOOM to OFF in the menu system.

Когда Вы используете функцию BOUNCE

Установите D ZOOM на OFF в системе меню.

Note on the BOUNCE function
When you use the following functions, "BOUNCE" indicator does not appear.
- Wide mode
- Functions using the PICTURE EFFECT button
- Functions using the PROGRAM AE button

To cancel the fader function

Before pressing START/STOP, press FADER until the indicator disappears.

When the date, time or title is displayed
The date, time and title do not fade in or fade out.

When the START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING ⏊
You cannot use the fader function.

Note on the fader function
While using the BOUNCE function, you cannot use the following functions.
- Exposure
- Focus
- Zoom

Примечание относительно функции BOUNCE
Если Вы используете следующие функции, индикатор "BOUNCE" не появится.
- Широкоформатный режим
- Функции с использованием кнопки PICTURE EFFECT
- Функции с использованием кнопки PROGRAM AE

Для отмены функции введения/выведения изображения

Перед нажатием START/STOP нажимайте FADER до тех пор, пока индикатор не исчезнет.

Когда отображаются индикатор даты или времени и надпись
Индикатор даты, времени и надпись не вводятся и не выводятся вместе с изображением.

Когда переключатель START/STOP MODE установлен в положение 5SEC или ANTI GROUND SHOOTING ⏊
Вы не сможете использовать функцию введения/выведения изображения.

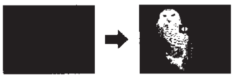
Примечания к функции введения/выведения изображения
Во время использования функции BOUNCE Вы не можете использовать следующие функции.
- Экспозиция
- Фокусировка
- Трансфокация

Shooting in the dark (NightShot)

Съемка в темных условиях (Ночная съемка)

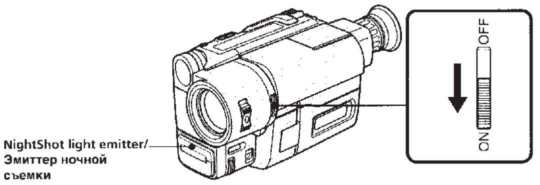
The NightShot function enables you to shoot a subject in a dark place. You can achieve a satisfactory recording of the ecology of nocturnal animals for observation with this function.

Функция ночной съемки позволяет Вам производить съемку объекта в темном месте. Вы можете получить удовлетворительную запись жизни ночных животных при использовании данной функции.



(1) While the camcorder is in Standby mode, slide NIGHTSHOT to ON.
(2) Press START/STOP to start recording.
▣ and "NIGHTSHOT" indicators flash.

(1) Когда видеокамера находится в режиме готовности, передвиньте NIGHTSHOT в положение ON.
(2) Нажмите START/STOP для начала записи.
Начнут мигать индикаторы ▣ и "NIGHTSHOT".



To cancel the NightShot function

Slide NIGHTSHOT to OFF.

Using the NightShot Light

When you set N.S.LIGHT to ON in the menu system, the picture will be more clear.
NightShot light rays are infrared and are therefore invisible. The maximum limit of NightShot light is about 3 m.

Для отмены функции ночной съемки

Передвиньте NIGHTSHOT в положение OFF.

Использование лампы ночной съемки

Когда функция N.S. LIGHT установлена на ON в системе меню, изображение будет более четким.
Световые лучи ночной съемки являются инфракрасными лучами и поэтому являются невидимыми. Максимальный предел для ночной съемки составляет около 3 метров.

Shooting in the dark (NightShot)

Съемка в темных условиях (Ночная съемка)

Notes on the NightShot

- Do not use the NightShot function in bright places (ex. outdoors).
  This may cause your camcorder to malfunction.
- The following functions are not operable when using the NightShot function.
  - PROGRAM AE
  - Exposure
- When you keep setting NIGHTSHOT to ON in normal recording, picture may be recorded in incorrect/unnatural colour.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

Примечания к ночной съемке

- Не используйте функцию ночной съемки (NightShot) при съемке в светлом месте, (например, днем на улице), поскольку это может привести к сбоям в работе камеры.
- При использовании функции ночной съемки неприменимы следующие функции:
  - PROGRAM AE
  - Экспозиция
- Когда Вы оставляете NIGHTSHOT в положении ON при нормальной записи, изображение может быть записано в неправильном/неестественном цвете.
- Если фокусировка в автоматическом режиме при использовании функции ночной съемки затруднена, выполните фокусировку вручную.

Using the wide mode function

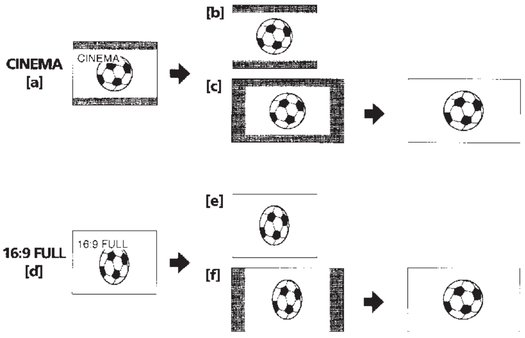
Использование функции широкоформатного режима

Selecting the desired mode

Выбор желаемого режима

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).

Вы можете записывать изображение как в кинотеатре (CINEMA) или широкоформатное изображение 16:9 для просмотра на широкоэкранном телевизоре формата 16:9 (16:9 FULL).



CINEMA

Black bands appear at the top and the bottom of the screen, and the viewfinder or LCD screen **[a]** and a normal TV screen **[b]** look wide. You can also watch the picture without black bands on a wide-screen TV **[c]**.

16:9 FULL

The picture in the viewfinder or on the LCD screen **[d]** or on a normal TV **[e]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[f]**.

CINEMA

Черные полосы появляются сверху и снизу экрана, видоискатель и экран ЖКД **[a]** и нормальный экран телевизора **[b]** выглядят широкими. Вы также можете просмотреть изображение без черных полос на широкоэкранном телевизоре **[c]**.

16:9 FULL

Изображение на экране ЖКД **[d]** или на обычном телевизоре **[e]** сжато по горизонтали. Вы можете просмотреть нормальное изображение на широкоэкранном телевизоре **[f]**.

Using the wide mode function

Использование функции широкоформатного режима

Using the wide mode function

You can select the wide mode (OFF, CINEMA, 16:9FULL) in the menu system (p. 34).

To cancel wide mode

Select OFF in the menu system.

To watch the tape recorded in wide mode

To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the operating instructions of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode

- If wide mode is set to 16:9FULL, the SteadyShot function does not work and the "✋" indicator flashes (CCD-TRV46E only).
- In wide mode, you cannot select the BOUNCE function with FADER.
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- When recording, you cannot change the mode.

Использование функции широкоформатного режима

Вы можете выбрать широкоформатный режим (OFF, CINEMA, 16:9FULL) в системе меню (стр. 34).

Для отмены режима

Выберите OFF в системе меню.

Для просмотра ленты, записанной в широкоформатном режиме

Для просмотра ленты записанной в режиме CINEMA установите режим экрана широкоэкранного телевизора на режим масштабирования. Для просмотра ленты, записанной в режиме 16:9 FULL, установите его на полноэкранный режим. Подробности смотрите в инструкции по эксплуатации Вашего телевизора.
Заметьте, что изображение, записанное в режиме 16:9 FULL , выглядит сжатым на обычном телевизоре.

Примечания к широкоформатному режиму

- Если широкоформатный режим установлен на 16:9 FULL, то функция устойчивой съемки работать не будет, а индикатор "✋" будет мигать (только CCD-TRV46E).
- В широкоформатном режиме Вы не можете выбрать функцию перехода (BOUNCE) с помощью FADER.
- При записи в режиме 16:9 FULL индикатор даты или времени будет расширенным на широкоэкранном телевизоре.
- Если Вы осуществляете перезапись ленты, то лента будет записываться в таком режиме, как и исходная лента.
- Во время записи Вы не можете изменить режим.

Using the PROGRAM AE function

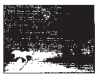
Использование функции PROGRAM AE

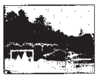
Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.

Выбор наилучшего режима

Вы можете выбрать из шести режимов PROGRAM AE (автоматической экспозиции) режим, который подходит для съемки в Вашей ситуации, сверяясь со следующими описаниями.





Spotlight mode
For subjects in spotlight, such as at the theatre or a formal event.

Soft Portrait mode
For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin colour.

Sports Lesson mode
For recording fast moving subjects such as in tennis or golf games.

Beach & Ski mode
For people or faces in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & Moon mode
For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

Landscape mode
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Режим прожекторного освещения
Для записи объекта под прожекторным освещением, как например, в театре или на официальном приеме.

Мягкий портретный режим
Для выполнения наезда видеокамеры на неподвижный объект в режиме телефото или для записи объекта, находящегося за преградой, например, за сеткой. Создает мягкий фон для таких объектов, как люди или цветы, и четко воспроизводит телесный цвет.

Режим спортивных занятий
Для съемки быстродвигающихся объектов, как например, в играх в теннис или гольф.

Пляжный и лыжный режим
Для записи людей или лиц, находящихся под сильным освещением или отраженным светом, как например, на пляже летом или на снежном склоне.

Режим захода солнца и луны
Для записи объектов в темных условиях, как например, заход солнца, фейерверки, неоновые рекламы или общие ночные пейзажи.

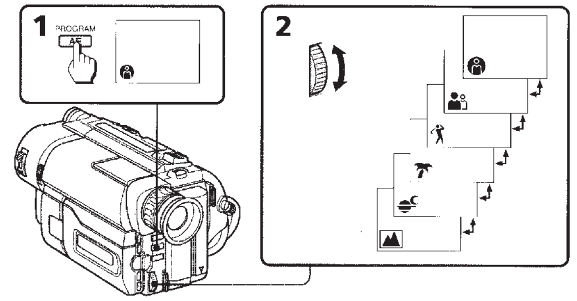
Ландшафтный режим
Для записи удаленных объектов, таких как горы, или при записи объекта за преградой, как например, за окном или сеткой.

Using the PROGRAM AE function

(1) Press PROGRAM AE.
(2) Turn the control dial to select the desired PROGRAM AE mode.

Использование функции PROGRAM AE

(1) Нажмите PROGRAM AE.
(2) Поверните регулировочный диск для выбора желаемого режима PROGRAM AE.



To turn off PROGRAM AE

Press PROGRAM AE again.

Notes on focus setting

- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

Note on PROGRAM AE

Flickering or changes in colour may occur in the following modes if recording is carried out under a discharge tube such as fluorescent lamp, sodium lamp or mercury lamp. If this happens, turn off PROGRAM AE.
– Soft Portrait mode
– Sports Lesson mode

Note

When using the NightShot function, the PROGRAM AE indicator flashes to indicate that it will not operate with this function.

Для выключения PROGRAM AE

Нажмите PROGRAM AE.

Примечания к установке фокусировки

- В режимах прожекторного освещения, спортивных занятий, а также пляжном и лыжном режиме Вы не можете снимать крупным планом, так как видеокамера фокусируется только на объекты среднего и дальнего удаления.
- В режимах захода солнца и луны и ландшафтном видеокамера фокусируется только на удаленные объекты.

Примечание о PROGRAM AE

Если съемка осуществляется под осветительной разрядной трубкой, например, люминесцентной, натриевой или ртутной лампой, при использовании двух названных ниже режимов может наблюдаться мерцание или изменение цвета изображения. В таком случае отключите PROGRAM AE.
– режим Мягкий портретный режим
– режим Режим спортивных занятий

Примечание

Когда Вы используете функцию ночной съемки, индикатор PROGRAM AE мигает, давая знать, что эта программа не будет работать одновременно с указанной функцией.

Focusing manually

Ручная фокусировка

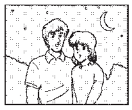
When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

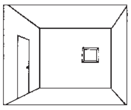
Когда использовать ручную фокусировку

В следующих случаях Вы можете получить лучшие результаты, отрегулировав фокусировку вручную.

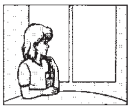
[a]



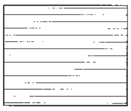
[b]



[c]



[d]



- Insufficient light **[a]**
- Subjects with little contrast – walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

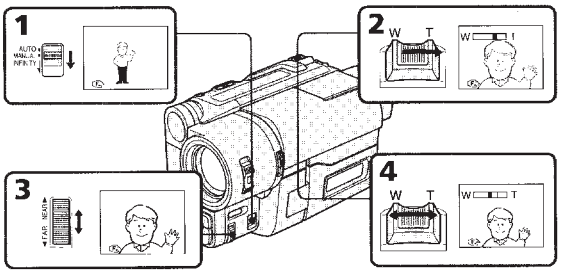
- Недостаточное освещение **[a]**
- Объекты с малым контрастом - стены, небо и т.д. **[b]**
- Слишком яркий фон за объектом **[c]**
- Горизонтальные полосы **[d]**
- Съемка объектов через матированное стекло
- Объекты за сеткой и т.д.
- Яркий объект или объект, отражающий свет
- Съемка неподвижного объекта с использованием треноги

Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Set FOCUS to MANUAL. The Ⓕ indicator appears in the viewfinder or on the LCD screen.
(2) Move the power zoom lever to the "T" side in the optical zoom until the lever reaches the end.
(3) Turn the NEAR/FAR dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom lever.

Ручная фокусировка

При ручной фокусировке сперва выполняйте фокусировку в режиме телефото перед записью, а затем установите расстояние съемки.
(1) Установите FOCUS на MANUAL. Индикатор Ⓕ появляется в видоискателе или на экране ЖКД.
(2) Перемещайте рычаг приводного трансфокатора в сторону "T" по оптической зоне пока он не дойдет до упора.
(3) Поверните диск NEAR/FAR для получения четкой фокусировки.
(4) Установите желаемое расстояние съемки с использованием рычага приводного трансфокатора.



To return to autofocus mode

Set FOCUS to AUTO. The Ⓕ indicator in the viewfinder or on the LCD screen disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject

Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.
Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing

The following indicators may appear:
▲ when recording a very distant subject.
👤 when the subject is too close to focus on.

Для возвращения к режиму автоматической фокусировки

Установите FOCUS на AUTO. Индикатор Ⓕ исчезнет из видоискателя или с экрана ЖКД.

Съемка в относительно темном месте

Производите съемку в положении широкого угла после выполнения фокусировки в положении телефото.

Для записи очень удаленного объекта

Нажать FOCUS вниз до INFINITY. Объектив фокусируется на наиболее удаленный объект, когда FOCUS удерживается в нажатом состоянии. После отпускания режим ручной фокусировки будет восстановлен. Используйте эту функцию при съемке через окно или решетку для фокусировки на наиболее удаленные объекты.

Примечание к ручной фокусировке

Могут появляться следующие индикаторы
▲ При записи очень удаленного объекта.
👤 Когда объект находится слишком близко для фокусировки.

Enjoying picture effect

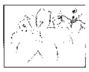
Наслаждение эффектами изображений

Selecting picture effect

You can digitally process images to obtain special effects like those in films or on the TV.

Выбор эффекта изображения

При помощи цифровой обработки изображения Вы можете достичь спецэффекта, аналогичного тем, которые применяются в кино и на телевидении.


[a]

[b]

[c]

[d]

[e]

[f]

PASTEL [a]
The contrast of the picture is emphasized, and the picture looks like an animated cartoon.

NEG. ART [b]
The colour and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

MOSAIC [d]
The picture is mosaic.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

PASTEL [a]
Контрастность изображения усиливается, и изображение выглядит, как мультипликация.

NEG. ART [b]
Цвет и яркость изображения будут негативными.

SEPIA
Изображение будет в цвете сепия.

B&W
Изображение будет монохроматическим (черно-белым).

SOLARIZE [c]
Интенсивность света будет более яркой, и изображение будет выглядеть, как иллюстрация.

MOSAIC [d]
Изображение будет мозаичным.

SLIM [e]
Изображение расширяется по вертикали.

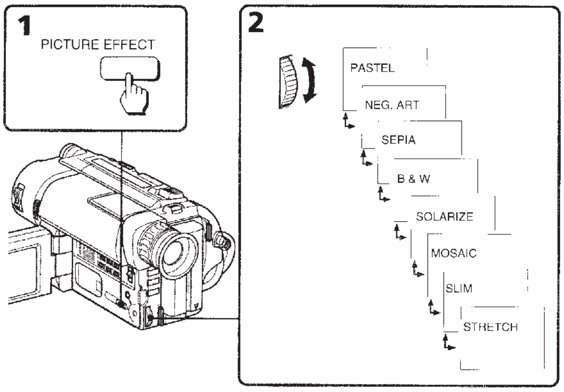
STRETCH [f]
Изображение расширяется по горизонтали.

Using picture effect function

(1) Press PICTURE EFFECT.
(2) Turn the control dial to select the desired picture effect mode.

Использование функции эффектов изображения

(1) Нажмите PICTURE EFFECT.
(2) Поверните регулировочный диск для выбора желаемого режима эффекта изображения.



To turn off picture effect

Press PICTURE EFFECT. The indicator in the viewfinder or on the LCD screen goes out.

Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

Выключение эффекта изображения

Нажмите PICTURE EFFECT. Индикатор эффекта изображения исчезнет из видоискателя или с экрана ЖКД.

Примечание к эффектам изображения
Когда Вы выключаете питание, видеокамера автоматически возвращается к нормальному режиму.

Adjusting the exposure

Регулировка экспозиции

When to adjust the exposure

Adjust the exposure manually under the following cases.

Когда требуется регулировать экспозицию

Отрегулируйте экспозицию вручную в следующих случаях.

[a]

[b]

[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

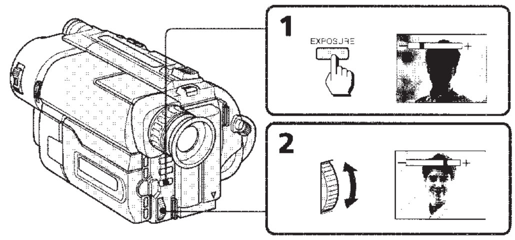
(1) Press EXPOSURE.
(2) Turn the control dial to adjust the brightness.

[a]
- Фон является слишком ярким (задняя подсветка)
- Недостаточное освещение: большая часть изображения темная

[b]
- Яркий предмет на темном фоне
- Для хорошей записи в темноте

Регулировка экспозиции

(1) Нажмите EXPOSURE.
(2) Поверните регулировочный диск для регулировки яркости.



To return to automatic exposure mode

Press EXPOSURE again.

Для возврата к режиму автоматической экспозиции

Снова нажмите EXPOSURE.

Shooting with the sun behind your subject
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark
We recommend you to use the built-in light (CCD-TRV46E only) or a video light (not supplied). To get the best colour, you must maintain a sufficient light level.

Note
Exposure cannot adjusted when using the NightShot function.

When you adjust the exposure manually
- BACK LIGHT does not work.
- If you change the setting of PROGRAM AE mode, the camcorder automatically returns to automatic exposure mode.

Съемка в условиях, когда солнце находится за Вашим объектом
Если источник освещения находится у Вас за спиной или в следующих условиях, объект будет записан слишком темным.
- Объект внутри помещения и окно находится за объектом.
- Источники яркого освещения попадают в кадр.
- Когда снимаемае человек, носящий белую или блестящую одежду, на белом фоне, лицо может стать темным.

Съемка в темных условиях
Мы рекомендуем Вам использовать встроенную подсветку (только CCD-TRV46E) или видеофонарь (не прилагается). Для получения наилучшего цвета Вы должны поддерживать достаточный уровень освещения.

Примечание
Вы не можете регулировать экспозицию при включенной функции ночной съемки.

Когда Вы регулируете экспозицию вручную
- Функция BACK LIGHT не работает.
- Если Вы измените режим PROGRAM AE, видеокамера автоматически вернется к режиму автоматической экспозиции.

Superimposing a title

Наложение надписи

You can select one of eight preset titles and two custom titles. You can also select the language, colour, size and position of titles.

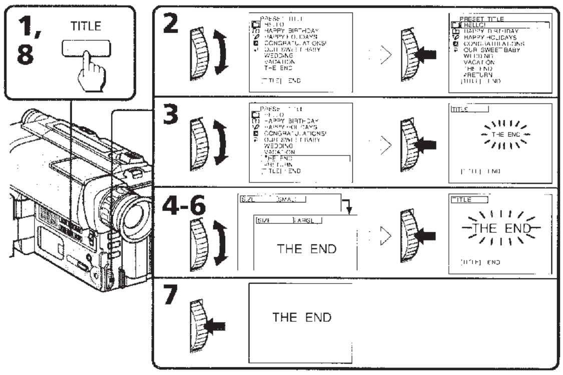
Superimposing titles

(1) Press TITLE to display the title menu.
(2) Turn the control dial to select 🗀 , then press the dial.
(3) Turn the control dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
(4) Turn the control dial to select the colour, size, or position, then press the dial.
(5) Turn the control dial to select the desired item, then press the dial.
(6) Repeat steps 4 and 5 until the title is arranged as desired.
(7) Press control dial again to complete the setting.
(8) When you want to stop recording the title, press TITLE.

Вы можете выбирать из восьми предварительно установленных надписей и двух совбственных надписей. Вы можете также выбирать язык, цвет, размер и положение надписей.

Наложение надписей

(1) Нажмите TITLE для отображения меню надписей .
(2) Поверните регулировочный диск для выбра 🗀, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора надписи, а затем нажмите регулировочный диск. Надпись отображается на выбранном Вами языке.
(4) Поверните регулировочный диск для выбора цвета, размера или положения, а затем нажмите регулировочный диск.
(5) Поверните регулировочный диск для выбора желаемого элемента, а затем нажмите регулировочный диск.
(6) Повторяйте пункты 4 и 5 до тех пор, пока не отрегулируете надпись по своему желанию.
(7) Нажмите регулировочный диск снова для завершения установки.
(8) Когда Вы захотите закончить запись надписи, нажмите TITLE.



Superimposing a title

Наложение надписи

To superimpose the title from beginning

After step 7, press START/STOP to start recording.

To superimpose the title while you are recording

After pressing START/STOP to start recording, start from step 1. In this case, beep is not heard.

To select the language of preset title

When you want to select the language, select 🅰 before step 2. Then select language and return to step 2.

To use the custom title

When you want to use the custom title, select 🗈 in step 2.

Notes on superimposing a title
- If you have not given any custom title, " ..." appears on the display.
- The FADER function works while the title is displayed, however, the title does not fade.
- If you display the menu or title menu while superimposing a title, the title is not recorded while the menu or title menu is being displayed.

Title colour changes as follows:
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

Title size changes as follows:
SMALL ←→ LARGE

Title position changes as follows:
When you select the title size "SMALL", you can choose 9 positions. When you select the title size "LARGE" you can choose 8 positions.

Notes on the title
- Depending on size or position of the title, both of the date and time or either of them is not displayed.
- If you input 13 characters or more for a LARGE title, the title is automatically reduced into a proper size after the position is set.
- When the title is displayed, LCD BRIGHT and VOLUME indicators do not appear.

Для наложения надписи от начала

После пункта 7 нажмите START/STOP для начала записи.

Для наложения надписи в процессе записи

После нажатия START/STOP для начала записи начните с пункта 1. В этом случае зуммерный сигнал подаваться не будет.

Для выбора языка предварительно установленной надписи

Если Вы хотите выбрать язык, выберите 🅰 перед пунктом 2. Затем выберите язык и вернитесь к пункту 2.

Для выбора собственной надписи

Если Вы хотите использовать собственную надпись, выберите 🗈 в пункте 2.

Примечания к наложению надписи
- Если Вы не дали надписи никакого названия, на дисплее появится индикация "– - ...".
- Функция FADER во время отображения названия работает, однако название плавно не вводится и не выводится.
- Если Вы отобразите дисплей меню или меню надписей во время наложения надписи, то надпись не будет записываться во время отображения дисплея меню или меню надписей.

Цвет надписей изменяется следующим образом:
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

Размер надписей изменяется следующим образом:
SMALL ←→ LARGE

Положение надписи изменяется следующим образом:
Если Вы выбираете размер надписи "SMALL", то Вы можете выбирать одно из 9 положений. Когда Вы выбираете размер надписи "LARGE", Вы может выбирать из 8 положений.

Примечания к надписям
- В зависимости от размера или положения названия дата и время или же что-то одно из них не отображается.
- Если Вы ввели 13 знаков или более для размера надписи LARGE, надпись автоматически уменьшается до надлежащего размера после выбора положения.
- Во время отображения надписи индикаторы LCD BRIGHT и VOLUME появляться не будут.

Making your own titles

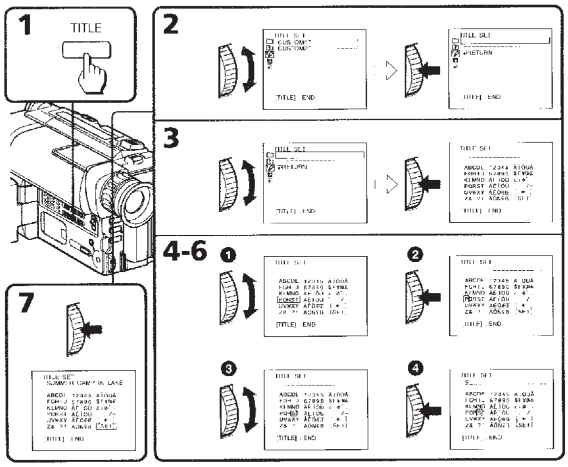
Создание Ваших собственных надписей

You can make up to two titles and store them in the camcorder. We recommend to set the POWER switch to PLAYER or eject the cassette before you begin.
Your title can have up to 20 characters.

(1) Press TITLE to display the title menu.
(2) Turn the control dial to select ✎ , then press the dial.
(3) Turn the control dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
(4) Turn the control dial to select the column of the desired character, then press the dial.
(5) Turn the control dial to select the desired character, then press the dial.
(6) Repeat steps 4 and 5 until you finish the title.
(7) For finishing the titling work, turn the control dial to select SET, then press the dial.

Вы можете создать две надписи и сохранить их в памяти видеокамеры. Мы рекомендуем установить выключатель POWER в положение PLAYER или вытолкнуть кассету перед началом.
Ваша надпись может иметь до 20 знаков.

(1) Нажмите TITLE для отображения меню надписей.
(2) Поверните регулировочный диск для выбора ✎, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора первой линии строки (CUSTOM1) или второй линии строки (CUSTOM2), а затем нажмите диск.
(4) Поверните регулировочный диск для выбора колонки с желаемым знаком, а затем нажмите диск.
(5) Поверните регулировочный диск для выбора желаемого знака, а затем нажмите регулировочный диск.
(6) Повторяйте пункты 4 и 5 до тех пор, пока не закончите надпись.
(7) Для окончания работы по созданию надписи поверните регулировочный диск для выбора SET, а затем нажмите диск.



Making your own titles

Создание Ваших собственных надписей

To edit a title you have stored

In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to edit, then change the title.

Note
You cannot enter over 20 characters title.

If you take 5 minutes or longer to enter characters while a cassette is in the camcorder
The power goes off automatically. Characters you have entered remain. Turn STANDBY down once and then up again, then proceed from step 1.

To delete a title

In step 4, turn the control dial to select [←] then press the dial. The last character is erased. Repeat this step until all characters are deleted.

Для редактирования запомненной надписи

В пункте 3 выберите CUSTOM1 или CUSTOM2 в зависимости от того, какую надпись Вы хотите отредактировать, а затем измените надпись.

Примечание
Вы не можете ввести больше, чем 20 знаков.

Если проходит 5 минут или более при вводе знаков в то время, когда кассета находится в видеокамере
Питание выключится автоматически. Знаки, которые Вы ввели, остаются в памяти. Поверните STANDBY один раз вниз, а затем снова вверх и начните с пункта 1.

Для отмены надписи

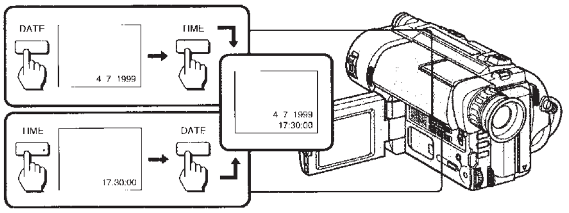
В пункте 4 поверните диск управления, чтобы выбрать [←], затем нажмите диск. Последний знак будет стерт. Повторяйте это действие до тех пор, пока не будут удалены все знаки.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder or on the LCD screen with the picture. Press DATE (or TIME), then press TIME (or DATE) to display the date and time together.
The clock is set at the factory to Sydney time for Australia and New Zealand models, to Tokyo time for the models sold in Japan, and to Hong Kong time for other models. You can reset the clock in the menu system.

Запись с датой/временем

Перед началом записи нажмите DATE или TIME. Вы можете записывать дату или время, отображаемые в видоискателе или на экране ЖКД, вместе с изображением. Нажмите DATE (или TIME), а затем нажмите TIME (или DATE) для отображения даты и времени одновременно.
Часы установлены на заводе на сиднейское время для моделей для Австралии и Новой Зеландии, на токийское время для моделей, продаваемых в Японии, и на гонконгское время для других моделей. Вы можете заново установить часы в системе меню.



To stop recording with the date and/or time

Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Для останова записи с датой и/или временем

Нажмите DATE и/или TIME снова. Индикатор даты и/или времени исчезнет. Запись будет продолжена.

Optimizing the recording condition

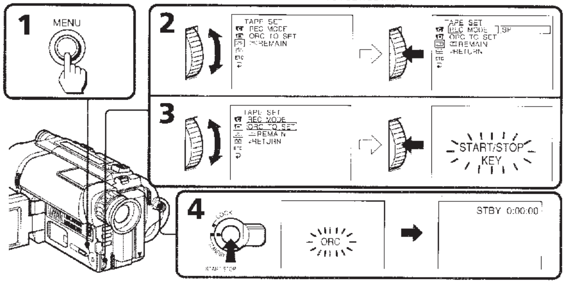
Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select ▭, then press the dial.
(3) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" flashes.
(4) Press START/STOP.
The camcorder takes about 5 10 seconds to check the tape condition and then returns to Standby mode.

Оптимизация состояния записи

Используйте данную функцию для проверки состояния ленты перед записью, так, чтобы Вы могли получить наилучшее по возможности изображение (ORC).

(1) Когда видеокамера будет находится в режиме готовности, нажмите MENU для отображения меню.
(2) Нажмите регулировочный диск для выбора ▭, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора ORC TO SET, а затем нажмите диск.
"START/STOP KEY" будет мигать.
(4) Нажмите START/STOP.
Видеокамере требуется около 5 – 10 секунд для проверки состояния ленты, а затем она возвращается в режим готовности.



Each time you insert the cassette

Perform the above procedures.

Notes on the ORC function

- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.
- ORC stands for "Optimizing the Recording Condition."

Каждый раз, когда Вы вставляете кассету

Выполняйте вышеописанную процедуру.

Примечания к функции ORC

- Когда Вы устанавливаете ORC TO SET, запись ленты стирается на 0,1 секунды, так, чтобы видеокамера смогла проверить состояние ленты. Будьте осторожны, когда Вы используете записанную ленту. 0,1-секундный пробел исчезает, если Вы начинаете запись от точки, где Вы установили ORC TO SET более, чем на 2 секунды, или если производите запись поверх незаписанной части.
- Вы не можете использовать данную функцию с лентой, если на кассете вставлена красная метка.
- Английское сокращение ORC означает "оптимизация условий записи".

Using the built-in light

– CCD-TRV46E only

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 1.5 m.

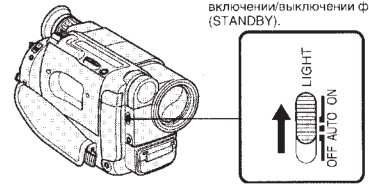
While the camcorder is in Standby mode, slide LIGHT to ON. The built-in light turns on.
The built-in light turns on/off by turning on/off STANDBY.

Использование встроенной подсветки

– Только CCD-TRV46E

При необходимости Вы можете во время съемки использовать встроенную подсветку. Рекомендуемое расстояние между видеокамерой и объектом съемки составляет около 1,5 м.

Когда видеокамера находится в режиме готовности, переведите переключатель LIGHT (свет) в положение ON (вкл.).
Включается подсветка.
Подсветка включается/выключается при включении/выключении функции готовности (STANDBY).



To stop using the built-in light

Slide LIGHT to OFF.

To turn on the built-in light automatically

Slide LIGHT to AUTO.
The built-in light automatically turns on and off according to the ambient brightness.
However, if the built-in light turns on for more than about 5 minutes, it automatically turns off. In this case, turn STANDBY down once and turn it up again.

Notes

- The battery pack is quickly discharging while the built-in light is turned on. Slide LIGHT to OFF when not in use.
- When you do not use the camcorder, slide LIGHT to OFF and remove the battery pack to avoid turning on the built-in light accidentally.
- When flickering occurs when you shoot white and bright subjects in AUTO mode, slide LIGHT to ON.
- The built-in light may turn on/off when you use the PROGRAM AE or BACK LIGHT function.
- When inserting or ejecting a cassette, the built-in light may be turned off.

Для прекращения пользования встроенным освещением

Переведите переключатель LIGHT в положение OFF.

Для автоматического включения встроенной подсветки

Сдвиньте переключатель LIGHT в положение AUTO.
Встроенная подсветка будет автоматически включаться и выключаться в зависимости от освещенности места съемки.
Однако если встроенная подсветка остается включенной на протяжении более пяти минут, она автоматически отключается. В такой ситуации опустите переключатель STANDBY вниз и тут же поднимите его вновь.

Примечания

- При включенной подсветке идет быстрая разрядка аккумуляторного блока. Поэтому когда Вы ее не используете, устанавливайте переключатель LIGHT в положение OFF.
- На время, когда Вы не пользуетесь видеокамерой, переводите переключатель LIGHT в положение OFF и отсоединяйте аккумуляторный блок во избежание случайного включения подсветки.
- Если при съемке Вами белых или ярких объектов в режиме AUTO изображение мерцает, переведите переключатель LIGHT в положение ON.
- При использовании Вами PROGRAM AE или функции BACK LIGHT может происходить включение/выключение встроенной подсветки.
- Встроенная подсветка может включаться, когда Вы вставляете или извлекаете кассету.

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

DANGER

Not to be handled by children.
Emits intense heat and light.
Use with caution to reduce the risk of fire or injury to persons.
Do not direct light at persons or materials from less than 1.22 meters during use and until cool.
Slide LIGHT to OFF when not in use.

Replacing the bulb

Use the Sony XB-3D halogen lamp (not supplied). The supplied halogen lamp is not on the market. Purchase the Sony XB-3D halogen lamp.
Remove the power source before replacing the bulb.

(1) While pushing the hole under the built-in light unit using a wire, remove the unit.
(2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
(3) Replace the bulb using a dry cloth.
(4) Attach the bulb housing turning it clockwise, then replace the built in light unit.

МЕРЫ ПРЕДОСТОРОЖНОСТИ

Старайтесь не прикасаться к осветительному блоку, поскольку когда подсветка включена, пластмассовое окошечко и поверхность корпуса рядом с ним нагреваются. Они остаются горячими на протяжении еще какого-то времени после выключения подсветки.

ВНИМАНИЕ!

Детям не разрешается пользоваться подсветкой.
Интенсивно излучает тепло и свет.
При эксплуатации соблюдайте меры предосторожности, чтобы свести к минимуму опасность возгорания или получения травмы.
При использовании и до остывания лампы подсветки не направляйте свет на людей или другие объекты с расстояния менее 1,22 м.
Когда подсветка не используется, переводите переключатель LIGHT в положение OFF.

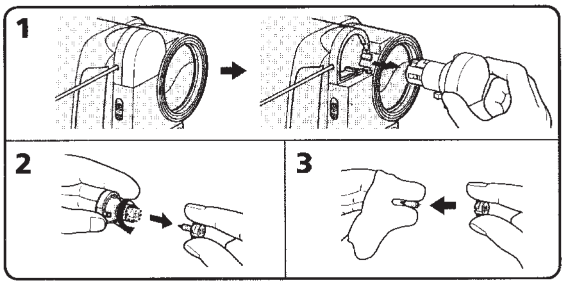
Смена лампы

Используйте галогенную лампу Sony XB-3D (не прилагается). Входящей в комплектацию камеры галогенной лампы в открытой продаже нет, поэтому приобретайте галогенную лампу Sony XB-3D. Перед заменой лампы отключите питание.

(1) Вставьте проволочку в отверстие под блоком встроенного источника света и, нажав на нее, снимите блок.
(2) Поверните патрон с лампочкой против часовой стрелки и отсоедините его от блока встроенного источника света.
(3) Замените лампочку, используя сухую тряпочку.
(4) Присоедините патрон с лампочкой, вращая его по часовой стрелке, затем установите блок подсветки на место.

Using the built-in light

Использование встроенной подсветки



CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (not supplied) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

Note
To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it completely.

МЕРЫ ПРЕДОСТОРОЖНОСТИ

- В целях уменьшения опасности возгорания используйте для замены только галогенную лампу Sony XB-3D (не прилагается).
- Чтобы предотвратить возможные ожоги, перед сменой лампочки отсоединяйте источник питания и не притрагивайтесь к лампочке пока она не остынет до температуры, при которой ее можно брать в руки (примерно через 30 или более минут).

Примечание
Чтобы не запачкать лампочку отпечатками пальцев, беритесь за нее сухой тряпочкой или чем-нибудь подобным. Если лампочка загрязнилась, протрите ее начисто.

Releasing the STEADYSHOT function

– CCD-TRV46E only
When the SteadyShot function is working, the camcorder compensates for camera-shake.

You can release the SteadyShot function when you do not need to use the SteadyShot function. The “✋” indicator lights up when you release the SteadyShot function. You do not need to use the SteadyShot function when shooting a stationary object with a tripod.
You can select ON or OFF in the menu system (p. 34).

To activate the SteadyShot function again

Set STEADYSHOT to ON in the menu system.

Notes on the SteadyShot function

- The SteadyShot function will not correct excessive camera-shake.
- When you set STEADYSHOT to ON or OFF in the menu system, the exposure may fluctuate.
- SteadyShot does not operate in 16:9 FULL mode. If you set STEADYSHOT to ON in the menu system, the ✋ indicator flashes.

Отключение функции STEADYSHOT

– Только CCD-TRV46E
Когда работает функция устойчивой съемки, видеокамера осуществляет компенсацию дрожания видеокамеры.

Вы можете отключить функцию устойчивой съемки, когда Вы не нуждаетесь в использовании функции устойчивой съемки. При отключении функции SteadyShot зажигается индикатор “✋”. Вам не нужно использовать функцию SteadyShot, когда Вы ведете съемку неподвижного объекта с треноги.
Вы можете выбирать ON или OFF в системе меню (стр. 34).

Для активизации функции устойчивой съемки снова

Установите STEADYSHOT на ON в системе меню.

Примечания к функции устойчивой съемки

- Функция устойчивой съемки не откорректирует чрезмерного дрожания видеокамеры.
- При установке функции STEADYSHOT в положение ON или OFF в системе меню экспозиция может колебаться.
- Функция устойчивой съемки не работает в режиме 16:9FULL. Если Вы установите STEADYSHOT на ON, индикатор ✋ будет мигать.

Watching on a TV screen

Connect the camcorder to your TV or VCR to watch the playback picture on the TV screen. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use the mains for the power source.

While playing back on a TV screen, close the LCD panel. Otherwise, picture distortion may occur.

Connecting directly to a TV/VCR with Video/Audio input jacks

When connecting the A/V connecting cable, make sure you connect the plug to jacks of the same colour.
Open the jack cover. With using the supplied A/V connecting cable, connect the camcorder to the LINE IN inputs on the TV or VCR connected to the TV. Set the TV/VCR selector on the TV to VCR. When connecting to the VCR, set the input selector on the VCR to LINE.

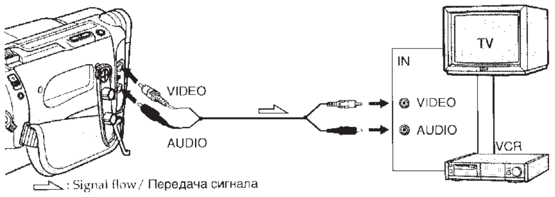
Просмотр на экране телевизора

Подсоедините видеокамеру к Вашему телевизору или КВМ для просмотра воспроизводимого изображения на экране телевизора. При просмотре воспроизводимого изображения путем подсоединения видеокамеры к Вашему телевизору мы рекомендуем Вам использовать электрическую сеть в качестве источника питания.

Во время воспроизведения на экране телевизора, закройте панель ЖКД. В противном случае могут происходить искажения изображения.

Подсоединение прямо к телевизору/КВМ с входными гнездами аудио/видео

При подсоединении соединительного кабеля аудио/видео убедитесь, что Вы подсоединяете штекеры к гнездам одинакового цвета.
Откройте крышку гнезда. Подсоедините видеокамеру к входам LINE IN на телевизоре или на подсоединенном к телевизору КВМ с использованием прилагаемого соединительного кабеля аудио/видео. Установите селектор TV/VCR на телевизоре в положение VCR. При подсоединении к КВМ установите селектор входных сигналов на КВМ в положение LINE.



⇨: Signal flow / Передача сигнала

To connect to a TV or VCR without Video/Audio input jacks
Use a PAL type RFU adaptor (not supplied).

Для подсоединения к телевизору или КВМ без входных гнезд аудио/видео
Используйте ВЧ-адаптер типа PAL (не прилагается).

Using the AV cordless IR receiver – LASER LINK

–CCD-TRV46E only
Once you connect the AV cordless IR receiver (not supplied) having the ⚡LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instruction of the AV cordless IR receiver.
LASER LINK is a system which transmits and receives a picture and sound between video equipment having the ⚡ mark by using infrared rays.
LASER LINK is a trademark of Sony Corporation.

To play back on a TV

(1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
(2) Set the POWER switch on the camcorder to PLAYER.
(3) Turn the TV on and set the TV/VCR selector on the TV to VCR.
(4) Press LASER LINK. The lamp of the LASER LINK button lights up.
(5) Press ► on the camcorder to start playback.
(6) Point the LASER LINK emitter at the AV cordless IR receiver.

To cancel the LASER LINK function
Press LASER LINK.

Note
When LASER LINK is activated (the LASER LINK button is lit), the camcorder consumes power. Press and turn off the LASER LINK button when it is not needed.

Использование беспроводного ИК аудиовидеоприемника – LASER LINK

–Только CCD-TRV46E
Если Вы подсоедините беспроводной ИК аудиовидеоприемник (не прилагается), имеющий знак ⚡ LASER LINK, к Вашему телевизору или КВМ, то Вы сможете легко просматривать изображение на экране Вашего телевизора. Смотрите подробности в руководстве по эксплуатации беспроводного ИК аудиовидеоприемника.
LASER LINK является системой приема и передачи изображения и звука между видеоаппаратурой, имеющей знак ⚡, с помощью инфракрасных лучей.
LASER LINK является торговой маркой корпорации “Sony”.

Для воспроизведения на телевизоре

(1) После соединения Вашего телевизора и беспроводного ИК аудиовидеоприемника, установите выключатель POWER на беспроводном ИК аудиовидеоприемнике в положение ON.
(2) Установите выключатель POWER на видеокамере в положение PLAYER.
(3) Включите телевизор и установите селектор TV/VCR на телевизоре в положение VCR.
(4) Нажмите LASER LINK. Зажжется лампочка кнопки LASER LINK.
(5) Нажмите ► на видеокамере для начала воспроизведения.
(6) Наведите излучатель LASER LINK на беспроводной ИК-аудиовидеоприемник.

Для отмены функции LASER LINK
Нажмите LASER LINK.

Примечания
Когда функция LASER LINK включена (лампочка кнопки LASER LINK горит), видеокамера потребляет питание. Нажмите и выключите кнопку LASER LINK, если данная функция не требуется.

Editing onto another tape

You can create your own video programme by editing with any other 8 8 mm, Hi8 Hi8, DV miniDV, DV DV, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC or B Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.
Set EDIT to ON in the menu system (p. 36).

Starting editing

Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point just before where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.
(4) First press ❚❚ on the camcorder, and after a few seconds press ❚❚ on the VCR to start editing.

To edit more scenes
Repeat steps 2 to 4.

To superimpose the title while you are editing
You can superimpose the title while you are editing. Refer to "Superimposing a title" (p. 53).

To stop editing
Press ■ on both the camcorder and the VCR.

Note on Fine Synchro Edit
If you connect a video deck that has the Fine Synchro Edit feature to the LANC ⏼ jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

Монтаж на другую ленту

Вы можете создать Вашу собственную видеопрограмму путем монтажа с помощью другого КВМ типа 8 8 мм, Hi8 Hi8, DV miniDV, DV DV, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC или B Betamax, который имеет входы аудио/видео.

Перед монтажем

Подсоедините видеокамеру к КВМ, используя прилагаемый соединительный кабель аудио/видео.
Установите селектор входных сигналов на КВМ в положение LINE, если такое имеется.
Установите EDIT на ON в системе меню (стр. 36).

Начните монтаж

Понизьте громкость видеокамеры во время монтажа. В противном случае может произойти искажение изображения.

(1) Вставьте чистую ленту (или ленту, которую Вы хотите перезаписать) в КВМ и вставьте Вашу записанную ленту в видеокамеру.
(2) Воспроизводите записанную ленту в видеокамере до тех пор, пока Вы не обнаружите точку, откуда Вы хотите начать монтаж, а затем нажмите ❚❚ для установки видеокамеры на режим паузы воспроизведения.
(3) Найдите на КВМ точку начала записи и установите КВМ на режим паузы записи.
(4) Сначала нажмите ❚❚ на видеокамере, а через несколько секунд нажмите кнопку ❚❚ на КВМ для начала монтажа.

Для монтажа других сцен
Повторите пункты со 2 по 4.

Для наложения надписи во время монтажа
Вы можете наложить надпись во время монтажа. См. раздел "Наложение надписи" (стр. 53).

Для остановки монтажа
Нажмите ■ и на видеокамере и на КВМ.

Примечание к точному синхронному монтажу
Если Вы подсоедините видеодеку, которая имеет функцию точного синхронного монтажа к гнезду LANC ⏼ на видеокамере с использованием кабеля LANC (не прилагается), то монтаж будет еще более точный.

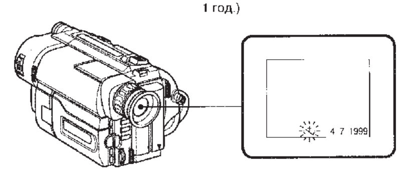
Additional information | **Дополнительная информация**

Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the ⏲ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)

Замена литиевой батарейки в видеокамере

Ваша видеокамера снабжена установленной литиевой батарейкой. Если батарейка станет слабой или полностью разрядится, индикатор ⏲ будет мигать в видоискателе приблизительно в течение 5 секунд, когда Вы установите выключатель POWER в положение CAMERA. В этом случае **замените батарейку на батарейку марки Sony CR2025 или на литиевую батарейку марки Duracell DL-2025. Использование какой-нибудь другой батарейки может представлять риск воспламенения или взрыва.** Выбросьте использованную батарейку в соответствии с указаниями изготовителя.
Литиевой батарейки для видеокамеры хватает приблизительно на 1 год при нормальных условиях эксплуатации. (Литиевой батарейки, которая была установлена на заводе, может не хватить на 1 год.)

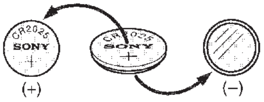


Notes on lithium battery

- **Keep the lithium battery out of the reach of children.**
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (−) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**

Примечания к литиевой батарейке

- **Держите литиевую батарейку в не доступном для детей месте.**
  Если батарейка была проглочена, немедленно обратитесь к доктору.
- Протрите батарейку сухой тканью для обеспечения хорошего контакта.
- Не берите батарейку металлическими щипцами, или же может произойти короткое замыкание.
- Учтите, что литиевая батарейка имеет положительный (+) и отрицательный (−) полюсы, как показано на рисунке. **Обязательно вставьте литиевую батарейку так, чтобы полюсы на батарейке соответствовали полюсам на видеокамере.**



Changing the lithium battery in the camcorder

WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

(1) Open the LCD panel and open the lid of the lithium battery compartment.
(2) Push the lithium battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

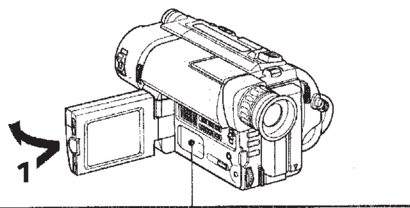
Замена литиевой батарейки в видеокамере

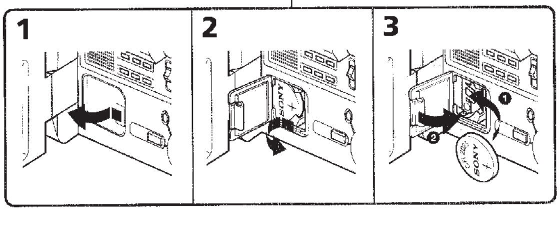
ПРЕДУПРЕЖДЕНИЕ
При неправильном обращении батарейка может взорваться. Не перезаряжайте, не разбирайте и не бросайте батарейку в огонь.

Замена литиевой батарейки

При замене литиевой батарейки, оставьте подсоединенным батарейный блок или другой источник питания. В противном случае Вам понадобится снова устанавливать дату, время и другие установки в системе меню, хранимые посредством литиевой батарейки.

(1) Откройте панель ЖКД и откройте крышку отсека литиевой батарейки.
(2) Нажмите батарейку вниз и вытащите ее из держателя.
(3) Установите литиевую батарейку положительной (+) стороной, обращенной наружу. Закройте крышку.





Resetting the date and time

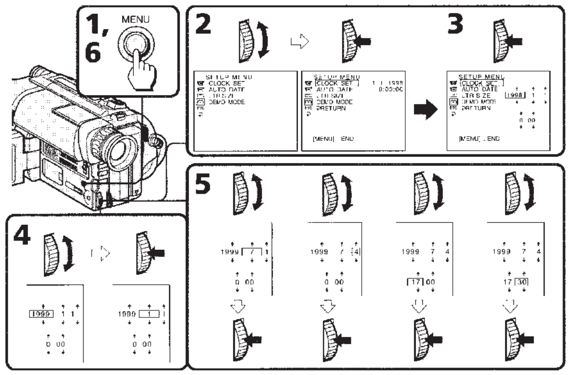
You can reset the date and time in the menu system.

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select ⛟, then press the dial.
(3) Turn the control dial to select CLOCK SET, then press the dial.
(4) Turn the control dial to adjust the desired year, then press the dial.
(5) Set the month, day, hour and minute by turning the control dial and pressing the dial.
(6) Press MENU to erase the menu display.

Установка даты и времени

Вы можете установить дату и время в системе меню.

(1) Когда видеокамера будет находится в режиме готовности, нажмите MENU для отображения меню.
(2) Поверните регулировочный диск для выбора ⛟, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора CLOCK SET, а затем нажмите диск.
(4) Поверните регулировочный диск для регулировки желаемого года, а затем нажмите регулировочный диск.
(5) Установите месяц, дату, часы и минуты, поворачивая регулировочный диск, а затем нажимая диск.
(6) Нажмите MENU для стирания дисплея меню.



To correct the date and time setting
Repeat the above procedure.

To check the preset date and time
Press DATE to display the date indicator.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year changes as follows:

1998 ←→ 1999 ← ···· → 2029

Note on the time indicator
The internal clock of this camcorder operates on a 24-hour cycle.

Для корректировки установки даты и времени
Повторите вышеописанную процедуру.

Для проверки предварительно установленных даты и времени
Нажмите DATE для отображения индикатора даты.
Нажмите TIME для отображения индикатора времени.
Если Вы снова нажмете ту же самую кнопку, индикатор исчезнет.

Год изменяется следующим образом:

1998 ←→ 1999 ← ···· → 2029

Примечание к индикатору времени
Встроенные часы данной видеокамеры работают в 24-часовом цикле.

Simple setting of clock by time difference

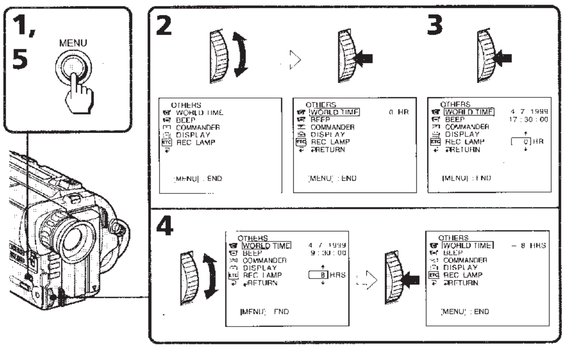
Простая установка часов с помощью разницы во времени

You can easily set the clock for a local time by a time difference in the menu system.

(1) While the camcorder is the standby mode, press MENU to display the menu.
(2) Turn the control dial to select **ETC**, then press the dial.
(3) Turn the control dial to select WORLD TIME, then press the dial.
(4) Turn the control dial to set a time difference, and press the dial. The hour of clock changes in relation to a time difference which you set.
(5) Press MENU to erase the menu display.

Вы можете легко установить часы на местное время с помощью разницы во времени в системе меню.

(1) Когда видеокамера будет находится в режиме готовности нажмите MENU для отображения меню.
(2) Поверните регулировочный диск для выбора **ETC**, а затем нажмите диск
(3) Поверните регулировочный диск для выбора WORLD TIME, а затем нажмите диск.
(4) Поверните регулировочный диск для установки разницы во времени, а затем нажмите диск. Время на часах изменится в соответствии с разницей во времени, которую Вы установили.
(5) Нажмите MENU для стирания дисплея меню.



Note on WORLD TIME
If the time is not set, WORLD TIME does not work.

Примечание к фукции WORLD TIME
Если время не установлено, функция WORLD TIME не работает.

Usable cassettes and playback modes

Используемые кассеты и режимы воспроизведения

Selecting cassette types

– CCD-TRV46E only
This Hi8 system is an extension of the standard 8 mm system, and was developed to realize higher picture quality.
You can use either Hi8 or standard 8 mm video cassette for this camera. When you use a Hi8 video cassette, the recording is made in the Hi8 system. When you use a standard 8 mm video cassette, the recording is made in the standard 8 mm system. Standard 8 mm video cassette is incapable of recording in the Hi8 system.
If you intend to use a standard 8 mm video recorder/player to play back a video tape, you are required to use a standard 8 mm video cassette for recording.

What is Video 8 XR

"XR" is an abbreviation of "Extended Resolution." The video 8 XR camcorder is new type of 8 mm camcorder with a picture quality superior to the conventional video 8 camcorder respectively. You can record and play back pictures more clearly with the "XR" camcorder.
A video tape recorded by the "XR" camcorder gives excellent picture quality at maximum when it is played back on the "XR" camcorder.
When a video tape recorded by this "XR" camcorder is played back on a conventional 8 camcorder or when a video tape recorded on a conventional 8 camcorder is played back on this "XR" camcorder, the playback picture has the normal quality of an 8 camcorder.

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Foreign 8 mm video

Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV colour system of foreign countries.

Выбор типа кассеты

– только CCD-TRV46E
Эта система Hi8 является усовершенствованием стандартной системы 8 мм и была разработана для реализации высокого качества изображения.
Вы можете использовать для этой камеры видеокассеты Hi8 или же стандартные видеокассеты на 8-мм ленте. В случае использования видеокассет Hi8 запись выполняется в системе Hi8. В случае использования видеокассет на 8-мм ленте запись выполняется в системе 8 мм. Стандартная видеокассета на 8-мм ленте не может обеспечить запись в системе Hi8.
Если Вы намереваетесь использовать стандартный видеомагнитофон/видеоплейер системы 8 мм, то следует использовать для записи стандартную видеокассету на 8-мм ленте.

Что такое Video 8 XR

"XR" - это сокращение от термина "Улучшенное разрешение". Видеокамера системы 8 XR это новый тип 8-мм видеокамеры с качеством изображения лучше чем у обычной камеры системы Video 8. Вы можете записывать и воспроизводить изображения с большей четкостью.
Пленка, записанная на видеокамере "XR" дает наилучшее качество изображения при воспроизведении на видеокамере "XR".
Если пленку, записанную на данной видеокамере "XR", воспроизводить на обычной видеокамере системы Video 8 или пленку, записанную на обычной видеокамере системы Video 8, воспроизводить на видеокамере "XR", то изображение будет качества обычной видеокамеры системы Video 8.

Когда Вы осуществляете воспроизведение

Режим воспроизведения (SP/LP) и система (Hi8/8-мм стандарт) выбираются автоматически в соответствии с форматом, в котором была записана лента. Однако, качество изображения, записанного в режиме LP, не будет таким хорошим, как при записи в режиме SP.

Иностранные 8-мм видеоленты

Так как системы цветного телевидения отличаются в зависимости от страны, то может быть Вы не сможете воспроизводить иностранные предварительно записанные ленты. Смотрите перечень в разделе "Использование Вашей видеокамеры за границей" для проверки системы цветного телевидения иностранных государств.

Usable cassettes and playback modes

Используемые кассеты и режимы воспроизведения

Playing back an NTSC-recorded tape
You can play back tapes recorded in the NTSC video system using the SP mode. However, note that the following will occur during playback of an NTSC-recorded tape.

- When playing back a tape on a TV screen, you may not get the original colour depending on the TV. When you play back on a Multi System TV, set NTSC PB to the desired mode in the menu system.
- During playback, a black band appears on the lower part of the viewfinder or the LCD screen.
- You cannot play back a tape recorded in NTSC video system with LP mode neither on the LCD nor on a TV screen.
- If a tape has portions recorded in PAL and NTSC video systems, the tape counter reading is not correct. This discrepancy is due to the difference between the counting cycle of the two video systems.
- You cannot edit the NTSC-recorded tape onto another VCR.

Воспроизведение ленты, записанной в системе NTSC
Вы можете воспроизводить ленты, записанные в видеосистеме NTSC с использованием режима SP. Однако, обратите внимание на то, что следующее будет происходить во время воспроизведения ленты, записанной в системе NTSC.

- При воспроизведении на экране телевизора Вы можете не получить подлинные цвета в зависимости от телевизора. Если Вы воспроизводите ленту на мультисистемном телевизоре, установите NTSC PB на желаемый режим в системе меню.
- Во время воспроизведения черная полоса появляется в нижней части видоискателя или на экране ЖКД.
- Вы не можете воспроизводить ленты, записанные в системе NTSC в режиме LP, ни на ЖКД, ни на экране телевизора.
- Если лента имеет части, записанные в видеосистемах PAL и NTSC, показания счетчика будут неправильные. Это расхождение происходит из-за разницы между расчетом времени двух видеосистем.
- Вы не можете производить монтаж ленты, записанной в системе NTSC, на другой КВМ.

Tips for using the battery pack

Советы по использованию батарейного блока

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens or on the LCD screen, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.
Be sure and remove the battery pack after using the camcorder.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up. Remaining time in minutes appears.

Данный раздел показывает, как Вы можете получить наибольшую отдачу от Вашего батарейного блока.

Подготовка батарейного блока

Всегда носите дополнительные батарейные блоки

Имейте достаточный заряд батарейного блока для выполнения записи в 2 - 3 раза больше, чем Вы запланировали.

Срок службы заряда батарейного блока будет короче в холодных условиях

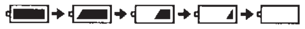
Эффективность батарейного блока снижается, и заряд батарейного блока используется быстрее, если Вы производите запись в холодных условиях.

Для экономии заряда батарейного блока

Поверните STANDBY вниз, когда Вы не производите запись, для экономии заряда батарейного блока.
Плавный переход между сценами может быть выполнен, даже если запись была остановлена и начата снова. Когда Вы позиционируете объект, выбираете угол или смотрите в объектив видоискателя или на экран ЖКД, объектив перемещается автоматически, и батарейный блок будет использоваться. Батарейный блок также используется при вставке и удалении ленты.
По окончании пользования видеокамерой не забудьте отсоединить батарейный блок.

Когда заменять батарейный блок

Когда Вы используете видеокамеру, индикатор оставшегося зарнда батарейного блока постепенно уменьшается по мере использования заряда батарейного блока. Также появляется оставшееся время в минутах.



When the remaining battery indicator reaches the lowest point, the ▭ indicator may appear and start flashing in the viewfinder or on the LCD screen.
When the ▭ indicator changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Когда индикатор оставшегося заряда батарейного блока достигает наинизшей точки, индикатор ▭ появляется и начинает мигать в видоискателе или на экране ЖКД.
Когда индикатор ▭ изменяет медленное мигание на быстрое мигание во время записи, установите выключатель POWER в положение OFF на видеокамере и замените батарейный блок. Оставьте ленту в видеокамере для получения плавного перехода между сценами после замены батарейного блока.

Tips for using the battery pack

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 60°C, such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 10°C to 30°C. Lower temperatures require a longer charging time.

Советы по использованию батарейного блока

Примечания к перезаряжаемому батарейному блоку

Предостережение

Никогда не оставляйте батарейный блок при температуре свыше 60° C, как например, в автомобиле, припаркованном на солнце, или под прямыми солнечными лучами.

Батарейный блок нагревается

Во время зарядки или записи батарейный блок нагревается. Это вызвано генерируемой энергией и химическими реакциями, которые происходят внутри батарейного блока. Это не должно быть причиной для беспокойства и является нормальным.

Обязательно соблюдайте следующее

- Храните батарейный блок подальше от огня.
- Храните батарейный блок сухим.
- Не пытайтесь открыть или разобрать батарейный блок.
- Не подвергайте батарейный блок никаким механическим ударам.

Срок службы батарейного блока

Если индикатор батарейного блока мигает быстро сразу после включения видеокамеры с полностью заряженным батарейным блоком, батарейный блок должен быть заменен новым полностью заряженным батарейным блоком.

Температура зарядки

Вы должны заряжать батарейный блок при температуре от 10° C до 30° C. Более низкая температура требует более длительного времени зарядки.

Tips for using the battery pack

Notes on the "InfoLITHIUM" battery pack

What is "InfoLITHIUM"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption.
When you use this battery pack with video equipment having the InfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.
"InfoLITHIUM" is a trademark of Sony Corporation.

* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time on the LCD screen or in the viewfinder, the ▭ indicator may also flash under some condition.

Советы по использованию батарейного блока

Примечания к батарейному блоку "InfoLITHIUM"

Что такое "InfoLITHIUM"

"InfoLITHIUM" является литиево-ионным батарейным блоком, который может обмениваться данными с совместимой видеоаппаратурой относительно расхода заряда батарейного блока.
При использовании данного батарейного блока с видеоаппаратурой, имеющей знак InfoLITHIUM, видеоаппаратура будет показывать оставшееся время заряда батарейного блока в минутах.* Однако, если Вы используете его с видеоаппаратурой, не имеющей такого знака, оставшаяся емкость батарейного блока не указывается в минутах.
"InfoLITHIUM" является товарным знаком корпорации Sony.

* Показание может быть неточным, в зависимости от условий и окружающей среды, при которых используется аппаратура.

Как отображается расход заряда батарейного блока

Потребляемая мощность видеокамерой изменяется в зависимости от условий ее использования, как например, работает ли автоматическая фокусировка.
Во время проверки состояния видеокамеры батарейный блок "InfoLITHIUM" измеряет расход батарейного заряда и вычисляет оставшийся заряд батарейного блока. Если условия использования сильно изменяются, индикация оставшегося заряда батарейного блока может резко уменьшиться или увеличиться более чем на 2 минуты.
Даже если 5 или 10 минут указано на экране ЖКД или в видоискателе в качестве оставшегося времени заряда батарейного блока, индикатор ▭ может все же мигать при некоторых условиях.

Tips for using the battery pack

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, recharge the battery pack fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the InfoLITHIUM mark, make sure that you use up the battery pack on the equipment having the InfoLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operating instructions is measured under the condition of using a fully charged (or normal charged) battery pack in 25°C. As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

[1] Full charge: Charging until FULL appears in the display window.

Советы по использованию батарейного блока

Для получения более точной индикации оставшегося заряда батарейного блока

Установите видеокамеру на режим готовности записи и наведите ее на неподвижный объект. Не двигайте видеокамеру в течение 30 секунд или более.

- Если индикация кажется неправильной, зарядите батарейный блок полностью (полная зарядка [1]). Имейте в виду, что если Вы использовали батарейный блок в жарких или холодных окружающих условиях в течение длительного времени, или если Вы повторяли зарядку много раз, батарейный блок может не показывать правильное время даже после полной зарядки.
- После использования батарейного блока "InfoLITHIUM" с аппаратурой, которая не имеет знака InfoLITHIUM, обязательно используйте заряд батарейного блока до конца с аппаратурой, имеющей знак InfoLITHIUM, а затем полностью зарядите его.

Почему индикация оставшегося заряда батарейного блока не соответствует времени непрерывной записи, указанному в инструкции по эксплуатации

На время записи влияет температура окружающей среды и другие условия. Время записи становится очень коротким в холодных условиях. Время непрерывной записи, указанное в инструкции по эксплуатации, измеряется в условиях использования полностью заряженного батарейного блока (или нормально заряженного≤≥) при температуре 25°C. Так как температура окружающей среды и другие условия отличаются от реальных условий использования видеокамеры, то время оставшегося заряда батарейного блока будет не таким, как время непрерывной записи, указанное в инструкции по эксплуатации.

[1] Полная зарядка: Зарядка до тех пор, пока FULL не появится в окошке дисплея.

Maintenance information and precautions

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Информация по уходу за аппаратом и предосторожности

Конденсация влаги

Если видеокамера принесена прямо из холодного места в теплое место, влага может сконденсироваться внури видеокамеры, на поверхности ленты или на объективе. В таком состоянии лента может прилипнуть к барабану головки и будет повреждена, или видеокамера не сможет работать правильно. Для предотвращения возможного повреждения ввиду таких обстоятельств, видеокамера снабжена датчиками влаги. Соблюдайте следующие предосторожности.

Внутри видеокамеры

Если внутри видеокамеры произошла конденсация влаги, то будет звучать зуммерный сигнал, и индикатор ▣ будет мигать. Если это случилось, то никакие функции, кроме выталкивания кассеты, не будут работать. Откройте кассетный отсек, выключите видеокамеру и оставьте ее приблизительно на 1 час. Если индикатор ⏏ будет мигать в то же самое время, то значит кассета вставлена в видеокамеру. Вытолкните кассету, выключите видеокамеру и оставьте кассету приблизительно на 1 час. Видеокамера снова может быть использована, если индикатор ▣ не будет появляться после включения питания.

На объективе

Если влага сконденсировалась на объективе, никакие индикаторы появляться не будут, но изображение станет тусклым. Выключите питание и не ипользуйте видеокамеру приблизительно 1 час.

Как предотвратить конденсацию влаги

Если видеокамера принесена из холодного места в теплое место, то положите видеокамеру в полиэтиленовый пакет и дайте ей адаптироваться к комнатным условиям за некоторый период времени.

(1) Обязательно плотно закройте полиэтиленовый пакет, содержащий камеру.

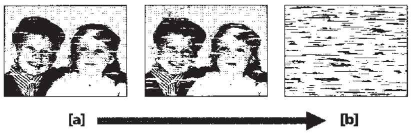
(2) Выньте камеру, когда температура воздуха внутри пакета достигнет температуры окружающего воздуха (приблизительно через 1 час).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "🖮 CLEANING CASSETTE" message appear one after another or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

Очистка видеоголовок

Для обеспечения нормальной записи и четкого изображения очищайте видеоголовки. Когда индикатор ⊗ и сообщение "🖮 CLEANING CASSETTE" появляются одно за другим или воспроизводимое изображение будет "зашумленным" или трудно просматриваемым, видеоголовки наверное загрязнены.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLD cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the Sony V8-25CLD cleaning cassette is not available in your area, consult your nearest Sony dealer.

[a] Слегка загрязнены
[b] Очень загрязнены

Если это случится, очистите видеоголовки с помощью очистительной кассеты V8-25CLD фирмы Sony (не прилагается). После проверки изображения, если оно все еще "зашумлено", повторите очистку. (Не повторяйте очистку более 5 раз за один прием.)

Предостережение

Не используйте имеющуюся в продаже очистительную кассету влажного типа. Она может повредить видеоголовки.

Примечание

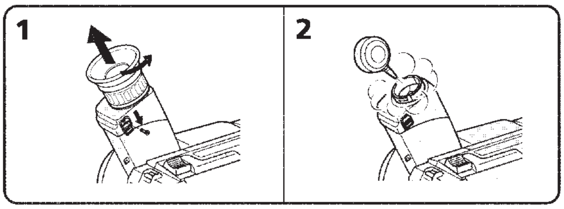
Если очистительной кассеты V8-25CLD фирмы Sony нет в продаже в Вашей области, проконсультируйтесь у Вашего ближайшего дилера Sony.

Removing dust from inside the viewfinder

(1) Remove the screw with a screwdriver (not supplied). Then, while sliding the RELEASE knob, turn the eyecup in the direction of the arrow and pull it out.
(2) Clean the surface with a blower sold on the market.

Удаление пыли из видоискателя

(1) Снимите винт с помощью отвертки (не прилагается). Затем, сдвигая ручку RELEASE, поверните окуляр в напралении стрелки и вытащите его.
(2) Очистите поверхность с помощью имеющейся в продаже воздуходувки.

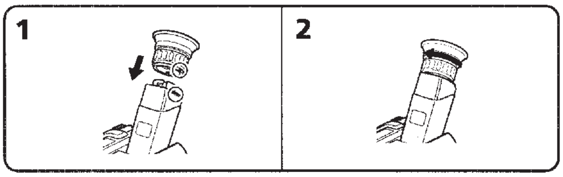


To reattach the eyecup

(1) Align the groove on the eyecup with the • mark on the barrel.
(2) Turn the eyecup in the direction of the arrow. Then replace the screw.

Для присоединения окуляра

(1) Совместите канавку на окуляре с меткой • на корпусе.
(2) Поверните окуляр в направлении стрелки. Затем установите на место винт.



Caution

Do not remove any other screws. You may remove only the screw to remove the eyecup.

Предостережение

Не снимайте никаких других винтов. Вы можете открутить только винт для снятия окуляра.

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

Built-in light
– CCD-TRV46E only

- Do not knock or jolt the buil-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Предосторожности

Эксплуатация видеокамеры

- Эксплуатируйте видеокамеру от 7,2 В (батарейный блок) или 8,4 В (сетевой адаптер перем. тока).
- Для эксплуатации от постоянного тока или переменного тока используйте принадлежности, рекомендованные в данном руководстве.
- Если какой-нибудь твердый предмет или жидкость попали в корпус, то выключите видеокамеру и проверьте ее у дилера Sony перед дальнейшей ее эксплуатацией.
- Избегайте грубого обращения или механических ударов. Будьте особенно осторожны с объективом.
- Держите выключатель POWER в положении OFF, когда видеокамера не используется.
- Не заворачивайте видеокамеру и не эксплуатируйте ее в таком состоянии, так как может произойти внутреннее повышение температуры.
- Держите видеокамеру подальше от сильных магнитных полей или механической вибрации.
- Не нажимайте на экран ЖКД.
- Если видеокамера используется в холодном месте, то на экране ЖКД могут появляться теневые изображения. Это не является неисправностью.
- Во время использования видеокамеры тыльная часть экрана ЖКД может нагреться. Это не является неисправностью.

Встроенная подсветка
– только CCD-TRV46E

- Когда блок подсветки включен, не подвергайте его ударам или сильной тряске, поскольку это может привести к повреждению лампы или сокращению срока ее службы.
- Не оставляйте подсветку включенной, когда блок подсветки к чему-либо прислонен или опирается на что-либо, так как это может привести к его возгоранию или повреждению.

Относительно обращения с лентами

Не вставляйте ничего в маленькие отверстия на задней стороне кассеты. Эти отверстия используются для определения типа ленты, толщины ленты и наличия лепестка защиты записи.

Camcorder care

- When the camcorder is not to be used for a long time, remove the tape. Periodically operate the camcorder both in the CAMERA and PLAYER modes and play back a tape for about 3 minutes.
- If fingerprints or debris make the LCD screen dirty, we recommend using a LCD Cleaning Kit (not supplied) to clean the LCD screen.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust with some protector such as Sony sports pack. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the mains when not in use for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.

Уход за видеокамерой

- Когда видеокамера не используется в течение длительного времени, удалите ленту. Периодически эксплуатируйте видеокамеру в режиме CAMERA и режиме PLAYER и осуществляйте воспроизведение записи с ленты в течение примерно 3 минут.
- Если отпечатки пальцев или мусор сделают экран ЖКД грязным, то мы рекомендуем использование очистительного набора для ЖКД (не прилагается) для очистки экрана ЖКД.
- Очищайте объектив с помощью мягкой кисточки для удаления грязи. Если имеются отпечатки пальцев на объективе, то удалите их с помощью мягкой ткани.
- Очищайте корпус аппарата с помощью сухой мягкой ткани или мягкой ткани, слегка смоченной раствором умеренного моющего средства. Не используйте каких-либо типов растворителей, которые могут повредить отделку.
- Не позволяйте песку попасть в видеокамеру. При использовании видеокамеры на песчаном пляже или в пыльном месте предохраняйте ее от песка и пыли, например, при помощи защитного кожуха Sony sports. Песок и пыль могут вызвать неисправность аппарата, и иногда такая неисправность может не подлежать ремонту.

Сетевой адаптер перем. тока

- Отсоедините аппарат от электрической сети, если он не используется длительное время. Для отсоединения сетевого провода вытащите его за разъем. Никогда не тяните за сам сетевой провод.
- Не эксплуатируйте аппарат с поврежденным проводом, или если аппарат упал или был поврежден.
- Не сгибайте сетевой провод силой и не ставьте на него тяжелые предметы. Это повредит провод и может привести к пожару или удару электрическим током.
- Убедитесь, что никакие металлические предметы не соприкасаются с металлическими частями соединительной пластины. Если это случится, может произойти короткое замыкание, и аппарат может быть поврежден.
- Всегда поддерживайте металлические контакты в чистоте.
- Не разбирайте аппарат.

Maintenance information and precautions

- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Notes on dry batteries
–CCD-TRV27E/TRV46E only

To avoid possible damage from battery leakage or corrosion, observe the following.
- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred
- Wipe off the liquid in the Remote Commander carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Информация по уходу за аппаратом и предосторожности

- Не подвергайте аппарат механическим ударам и не роняйте его.
- Когда аппарат используется, особенно во время зарядки, держите его подальше от радиоприемников AM и видеоаппаратуры, потому что он будет нарушать прием AM и работу видеоаппаратуры.
- Аппарат становится теплым во время зарядки. Это является нормальным.
- Не размещайте аппарат в местах, которые:
  - Чрезмерно жаркие или холодные
  - Пыльные или грязные
  - Очень влажные
  - Подвержены вибрации

Примечания к сухим батарейкам
– только CCD-TRV27E/TRV46E

Во избежание возможного повреждения из-за протечки батареек или корроизии соблюдайте следующее.
- Обязательно вставьте батарейки с правильным направлением.
- Сухие батарейки не являются перезаряжаемыми.
- Не используйте комбинацию старых и новых батареек.
- Не используйте различные типы батареек.
- Батарейки медленно разряжаются, даже если не используются.
- Не используйте батарейку, которая протекла.

Если случится протечка батареек
- Перед сменой батареек тщательно протрите пульт дистанционного управления насухо.
- Если Вы дотронетесь до жидкости, то промойте это место водой.
- Если жидкость попала Вам в глаза, то промойте Ваши глаза большим количеством воды, а затем обратитесь к врачу.

В случае возникновения каких-либо трудностей, отключите аппарат и обратитесь к Вашему ближайшему дилеру Sony.

Using your camcorder abroad

Each country or area has its own electric and TV colour systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz.

Difference in colour systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV.
Check the following list.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Использование Вашей видеокамеры за границей

Каждая страна или область имеет свои собственные системы электрической сети и цветного телевидения. Перед использованием Вашей видеокамеры за границей проверьте следующие пункты.

Источники питания

Вы можете использовать видеокамеру в любой стране или области с помощью прилагаемого сетевого адаптера перем. тока в пределах от 100 В до 240 В перем. тока, 50/60 Гц.

Различия в системах цветного телевидения

Данная видеокамера основана на системе PAL. Если Вы хотите просмотреть воспроизводимое изображение на телевизоре, то это должен быть телевизор, основанный на системе PAL.
Проверьте по следующему перечню.

Система PAL
Австралия, Австрия, Бельгия, Великобритания, Германия, Голландия, Гонконг, Дания, Испания, Италия, Китай, Кувейт, Малайзия, Новая Зеландия, Норвегия, Португалия, Сингапур, Словацкая Республика, Тайланд, Финляндия, Чешская Республика, Швейцария, Швеция и т.д.

Система PAL-M
Бразилия

Система PAL-N
Аргентина, Парагвай, Уругвай

Система NTSC
Багамские острова, Боливия, Венесуэла, Канада, Колумбия, Корея, Мексика, Перу, Суринам, США, Тайвань, Филиппины, Центральная Америка, Чили, Эквадор, Ямайка, Япония и т.д.

Система SECAM
Болгария, Венгрия, Гайяна, Ирак, Иран, Монако, Польша, Россия, Украина, Франция и т.д.

English

Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or Corrective Actions
The power is not on.	• The battery pack is not installed. ➔ Install the battery pack. (p. 8) • The battery is dead. ➔ Use a charged battery pack. (p. 9) • The AC power adaptor is not connected to the mains. ➔ Connect the AC power adaptor to the mains. (p. 31)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. ➔ Turn STANDBY down once and then up again. (p. 15) • The battery is dead. ➔ Use a charged battery pack. (p. 9)
The battery pack is quickly discharged.	• The camcorder does not operate when using a battery pack that is not an "InfoLITHIUM" battery pack. ➔ Use an "InfoLITHIUM" battery pack. (p. 74) • The ambient temperature is too low. (p. 73) • The battery pack has not been charged fully. ➔ Charge the battery pack again. (p. 9) • The battery pack is completely dead, and cannot be recharged. ➔ Use another battery pack. (p. 73)
While charging the battery pack, no indicator appears or the indicator flashes in the display window.	• The AC power adaptor is disconnected. ➔ Connect it firmly. • Something is wrong with the battery pack. ➔ Contact your Sony dealer or local authorized Sony service facility.

Operation

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The tape is stuck to the drum. ➔ Eject the tape. (p. 14) • The tape has run out. ➔ Rewind the tape or use a new one. (p. 14) • The POWER switch is set to PLAYER. ➔ Set it to CAMERA. (p. 15) • The tab on the cassette is out (red). ➔ Use a new tape or slide the tab. (p. 14)
Recording stops in a few seconds.	• The START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING ⊥ . ➔ Set it to ⊥ . (p. 19)

(to be continued)

Trouble check

Symptom	Cause and/or Corrective Actions
The cassette cannot be removed from the holder.	• The battery is dead. ➔ Use a charged battery pack or the AC power adaptor. (p. 9, 31)
▣ and ⏏ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. ➔ Remove the cassette and leave the camcorder for at least 1 hour. (p. 76)
The date or time indicator is flashing.	• You pressed DATE and TIME together for more than 2 seconds. ➔ The camcorder is not malfunctioning. You may start recording. Flashing will stop soon. • The lithium battery is weak or dead. ➔ Replace the lithium battery with a new one. (p. 67)
The tape does not move when a video control button is pressed.	• The POWER switch is set to CAMERA or OFF. ➔ Set it to PLAYER. • The tape has run out. ➔ Rewind the tape or use a new one. (p. 26)
The SteadyShot function does not activate. (CCD-TRV46E only)	• STEADYSHOT is set to OFF in the menu system. ➔ Set it to ON. (p. 62) • The SteadyShot function does not work when the wide mode is set to 16:9 FULL.
The autofocusing function does not work.	• FOCUS is set to MANUAL. ➔ Set it to AUTO. (p. 48) • Shooting conditions are not suitable for autofocus. ➔ Set FOCUS to MANUAL to focus manually. (p. 48)
The fader function does not work.	• The START/STOP MODE switch is set to 5SEC or ANTI GROUND SHOOTING ⊥ . ➔ Set it to ⊥ . (p. 19)
The date or time indicator disappears.	• Reset the date and time. (p. 68)
Exposure adjustment or the PROGRAM AE function does not work.	• The NIGHTSHOT switch is set to ON. ➔ Set it to OFF.

Picture

Symptom	Cause and/or Corrective Actions
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. ➔ Adjust the viewfinder lens. (p. 16)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. ➔ Change locations.

Trouble check

Symptom	Cause and/or Corrective Actions
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
The playback picture is not clear.	• EDIT is set to ON in the menu system. → Set it to OFF. (p. 36)
The picture is "noisy".	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (not supplied). (p. 77)
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel. (p. 20)
An unknown picture is displayed in the viewfinder or on the LCD screen.	• If 10 minutes elapse after you set the POWER switch to CAMERA without inserting a cassette, the camcorder automatically starts the demonstration or DEMO MODE is set ON in the menu system. → Insert the cassette and the demonstration stops. You can deactivate the demonstration. (p. 35)
The picture does not appear on the LCD screen.	• Incorporated fluorescent tube is worn out. → Please contact your nearest Sony dealer.
The five digit code appears.	• The self-diagnosis function is activated. → Check the code and solve the problem. (p. 89)
Picture is recorded in incorrect/unnatural colour.	• The NIGHTSHOT switch is set to ON. → Set it to OFF. (p. 41)
Picture appears too bright, and the subject does not appear in the viewfinder or on the LCD screen.	• The NIGHTSHOT switch is set to ON in a bright place. → Set it to OFF, or use the NightShot function in a dark place. (p. 41)

Others

Symptom	Cause and/or Corrective Actions
The supplied Remote Commander does not work. (CCD-TRV27E/TRV46E only)	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p. 34) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are not inserted with the correct polarity. → Insert the batteries with the correct polarity. (p. 99) • The batteries are dead. → Insert new ones. (p. 99)
The beep sounds for 5 seconds.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 76) • Some troubles occured in your camcorder. → Remove the cassette and insert it again, then operate the camcorder.
There is dust in the viewfinder.	• Detach the eyecup and clean the viewfinder. (p. 78)

Русский

Проверка неисправностей

Если у Вас возникла какая-либо проблема при использовании видеокамеры, воспользуйтесь следующей таблицей для отыскания и устранения проблемы.
Если трудности все еще остаются, то отсоедините источник питания и обратитесь к Вашему дилеру Sony или на местное уполномоченное предприятие по обслуживанию Sony.

Видеокамера

Питание

Признак	Причина и/или действия по устранению
Не включается питание.	• Не установлен батарейный блок. → Установите батарейный блок. (стр. 8) • Батарейный блок полностью разрядился. → Используйте заряженный батарейный блок. (стр. 9) • Сетевой адаптер перем. тока не подсоединен к электрической сети. → Подсоедините сететевой адаптер перем. тока к электрической сети. (стр. 31)
Питание выключается.	• При работе в режиме CAMERA видеокамера находилась в режиме готовности более 5 минут. → Поверните STANDBY вниз, а затем снова вверх. (стр. 15) • Батарейный блок полностью разрядился. → Используйте заряженный батарейный блок. (стр. 9)
Батарейный блок быстро разряжается.	• Видеокамера не работает при использовании батарейного блока, который не является батарейным блоком "InfoLITHIUM". → Используйте батарейный блок "InfoLITHIUM". (стр. 74) • Температура окружающей среды слишком низкая. (стр. 73) • Батарейный блок был заряжен не полностью. → Снова зарядите батарейный блок. (стр. 9) • Батарейный блок полностью разрядился и не может быть перезаряжен. → Используйте другой батарейный блок. (стр. 73)
Во время зарядки батарейного блока никакой индикатор не появляется, или индикатор мигает в окошке дисплея.	• Отсоединился сетевой адаптер переменного тока. → Подсоедините его надежно. • Что-то не в порядке у батарейного блока. → Свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием по техническому обслуживанию Sony.

Работа

Признак	Причина и/или действия по устранению
Не функционирует START/STOP.	• Лента прилипла к барабану. → Вытолкните ленту. (стр. 14) • Лента закончилась. → Перемотайте ленту назад или используйте новую. (стр. 14) • Выключатель POWER установлен в положение PLAYER. → Установите его в положение CAMERA. (стр. 15) • Лепесток кассеты отсутствует (красная метка). → Используйте новую ленту или передвиньте лепесток. (стр. 14)
Запись останавливается через несколько секунд.	• Переключатель START/STOP MODE установлен в положение 5SEC или ANTI GROUND SHOOTING ⊥ . → Установите его в положение ⊥ . (стр. 19)

Проверка неисправностей

Признак	Причина и/или действия по устранению
Кассета не может быть вынута из держателя.	• Батарейный блок полностью разряжен. → Используйте заряженный батарейный блок или сетевой адаптер перем. тока. (стр. 9, 31)
Мигают индикаторы ▣ и ⏏, и никакие функции, за исключением выталкивания кассеты, не работают.	• Произошла конденсация влаги. → Удалите кассету и оставьте видеокамеру по меньшей мере на 1 час. (стр. 76)
Мигает индикатор даты или времени.	• Вы нажали DATE и TIME одновременно более, чем на 2 секунды. → Видеокамера не является неисправной. Вы можете начинать запись. Мигание вскоре прекратится. • Литиевая батарейка слабая или полностью разряженная. → Замените литиевую батарейку на новую. (стр. 67)
Лента не перемещается при нажатии кнопки видеоконтроля.	• Выключатель POWER установлен в положение CAMERA или OFF. → Установить его в положение PLAYER. • Лента закончилась. → Перемотайте ленту назад или используйте новую. (стр. 26)
Не активизируется функция устойчивой съемки. (только CCD-TRV46E)	• Функция STEADYSHOT установлена на OFF. → Установите ее на ON. (стр. 62) • Функция устойчивой съемки не работает, когда широкоформатный режим установлен на 16:9FULL.
Не работает функция автоматической фокусировки.	• Функция FOCUS установлена на MANUAL. → Установите ее на AUTO. (стр. 48) • Условия съемки не подходят для автоматической фокусировки. → Установите FOCUS на MANUAL для фокусировки вручную. (стр. 48)
Функция плавного введения изображения не работает.	• Переключатель START/STOP MODE установлен в положение 5SEC или ANTI GROUND SHOOTING ⊥ . → Установите его в положение ⊥ . (стр. 19)
Исчезает индикатор даты или времени.	• Снова установите дату и время. (стр. 68)
Не работает регулировка экспозиции или функция PROGRAM AE.	• Функция NIGHTSHOT установлена на ON. →Установите ее на OFF.

Изображение

Признак	Причина и/или действия по устранению
Изображение на экране видоискателя нечеткое.	• Объектив видоискателя не отрегулирован → Отрегулируйте объектив видоискателя. (стр. 16)
Вертикальная полоса появляется, если такие объекты, как источники света или пламя свечи, снимаются на темном фоне.	• Слишком высокий контраст между объектом и фоном. Видеокамера не является неисправной. → Измените позицию съемки.

(Продолжается)

Проверка неисправностей

Признак	Причина и/или действия по устранению
Вертикальная полоса появляется при съемке очень яркого объекта.	• Видеокамера не является неисправной.
Воспроизводимое изображение нечеткое.	• Функция EDIT установлена на ON в системе меню. → Установите ее на OFF. (стр. 36)
Изображение "зашумлено".	• Возможно загрязнены видеоголовки. → Очистите видеоголовки с использованием очистительной кассеты Sony V8-25CLD (не прилагается). (стр. 77)
Изображение не появляется в видоискателе.	• Открыта панель ЖКД. → Закройте панель ЖКД. (стр. 20)
Незнакомое изображение появляется на экране ЖКД или в видоискателе.	• Если истечет 10 минут после того, как Вы установите выключатель POWER в положение CAMERA без вставленной кассеты, видеокамера автоматически начинает демонстрацию, или функция DEMO MODE в системе меню установлена на ON. → Вставьте кассету и демонстрация прекратится. Вы можете отключить демонстрационный режим. (стр. 35)
Изображение не появляется на экране ЖКД.	• Встроенная люминесцентная лампа вышла из строя. → Свяжитесь с Вашим ближайшим дилером Sony.
Появился пятизначный код.	• Была активизирована функция самодиагностики. → Проверьте код и устраните проблему. (стр. 90)
Изображение записывается в неправильном/ненатуральном цвете.	• Функция NIGHTSHOT установлена на ON. →Установите ее на OFF. (стр. 41)
Картинка слишком яркая, в видоискателе или на экране ЖКД неввозможно различить объект.	• Функция ночной съемки (NIGHTSHOT) включена при съемке в светлом месте. → Перключите ее на OFF или используйте ночную съемку в темном месте. (стр. 41)

Прочее

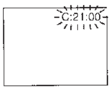
Признак	Причина и/или действия по устранению
Не работает прилагаемый пульт дистанционного управления. (только CCD-TRV27E/TRV46E)	• Функция COMMANDER установлена на OFF в системе меню. → Установите ее на ON. (стр. 34) • Что-то закрывает путь инфракрасных лучей. → Удалите препятствие. • Батарейка вставлена с неправильной полярностью. → Вставьте батарейку с правильной полярностью. (стр. 99) • Батарейки полностью разряжены. → Вставьте новые батарейки. (стр. 99)
Зуммерный сигнал звучит в течение 5 секунд.	• Произошла конденсация влаги. → Удалите кассету и оставьте видеокамеру по меньшей мере на 1 час. (стр. 76) • С Вашей видеокамерой случилась какая-то проблема. → Удалите кассету и вставьте ее снова, а затем эксплуатируйте видеокамеру.
В видоискатель попала пыль.	• Снимите окуляр и почистите видоискатель.(стр. 78)

English

Self-diagnosis display

The camcorder has a self-diagnosis display.
This function displays the camcorder's condition with five digits (a combination of a letter and figures) in the viewfinder, on the LCD screen or in the display window.
If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

LCD screen



Self-diagnosis display

- C:□□:□□
  You can service the camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony facilitiy.

Five-digit display	Cause and/or Corrective Actions
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 76)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (not supplied). (p. 77)
C:23:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 74)
C:31:□□ C:32:□□	• A serviceable situation not mentioned above has occurred. → Remove the cassette and insert it again, then operate the camcorder. → Disconnect the mains lead of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
E:61:□□ E:62:□□	• A camcorder malfunction which you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

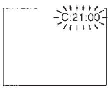
If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

Русский

Дисплей самодиагностики

Видеокамера имеет дисплей самодиагностики.
Данная функция отображает состояние видеокамеры с помощью пяти знаков (комбинации одной буквы и цифр) в видоискателе, на экране ЖКД или в окошке дисплея. Если это случится, выполните проверку в соответствии со следующей кодовой таблицей. Пятизначная индикация будет информировать Вас о текущем состоянии видеокамеры. Последние две цифры (указанных как □□) будут различаться в зависимости от состояния видеокамеры.

Экран ЖКД



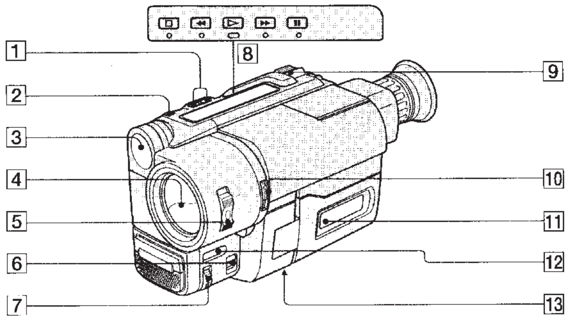
Дисплей самодиагностики

- C:□□:□□
  Вы можете выполнить техническое обслуживание видеокамеры самостоятельно.
- E:□□:□□
  Свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony.

Пятизначный дисплей	Вероятная причина и/или метод устранения.
C:21:□□	• Произошла конденсация влаги. → Выньте кассету и оставьте видеокамеру по меньшей мере на 1 час. (стр. 76)
C:22:□□	• Грязные видеоголовки. → Очистите видеоголовки с использованием очистительной кассеты V8-25CLD фирмы Sony (не прилагается). (стр. 77)
C:23:□□	• Вы используете батарейный блок, который не является батарейным блоком "InfoLITHIUM". → Используйте батарейный блок "InfoLITHIUM". (стр. 74)
C:31:□□ C:32:□□	• Возникла устраняемая неполадка, не указанная выше. → Выньте кассету и вставьте ее снова, а затем управляйте видеокамерой. → Отсоедините провод электропитания сетевого адаптера переменного тока или удалите батарейный блок. После обратного подсоединения источника питания управляйте видеокамерой.
E:61:□□ E:62:□□	• Случилась неисправность видеокамеры, для которой Вы не можете выполнить техническое обслуживание. → Свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony и проинформируйте их о появлении пяти знаков. (Например: E:61:10)

Если Вы не можете решить проблему, то свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony.

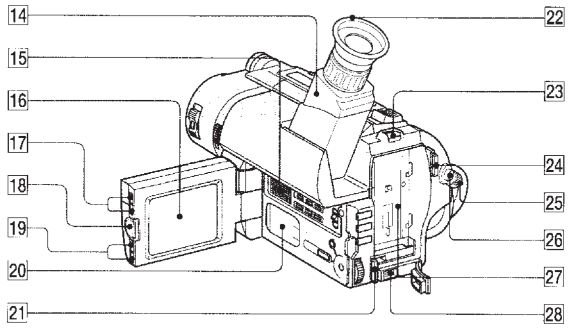
Identifying the parts Опознавание частей



1. **EDITSEARCH button** (p. 24)
2. **LASER LINK button** (CCD-TRV46E only) (p. 64)
3. **Built-in light** (CCD-TRV46E only) (p. 59)
4. **Lens cover**
5. **POWER switch** (p. 15)
6. **FOCUS switch** (p. 48)
7. **NEAR/FAR dial** (p. 48)
8. **Video control buttons** (p. 26)
   ■ STOP (stop)
   ◀◀ REW (rewind)
   ▶ PLAY (playback)
   ▶▶ FF (fastforward)
   ❚❚ PAUSE (pause)
9. **Power zoom lever** (p. 18)
10. **NIGHTSHOT switch** (p. 41)
11. **Display window** (p. 101)
12. **FADER button** (p. 39)
13. **Tripod receptacle** (p. 23)
    Make sure that the length of the tripod screw is less than 6.5 mm otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

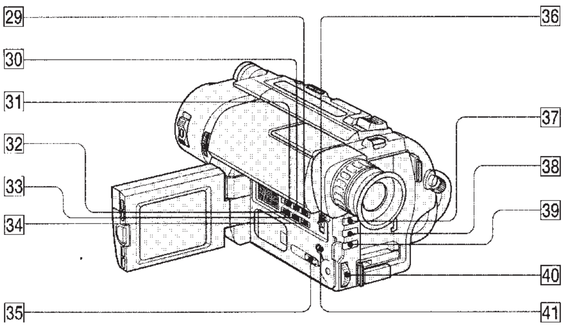
1. **Кнопка EDITSEARCH** (стр. 24)
2. **Кнопка LASER LINK** (только CCD-TRV46E) (стр. 64)
3. **Встроенный источник света** (только CCD-TRV46E) (стр. 59)
4. **Крышка объектива**
5. **Выключатель POWER** (стр. 15)
6. **Переключатель FOCUS** (стр. 48)
7. **Диск NEAR/FAR** (стр. 48)
8. **Кнопки видеоконтроля** (стр. 26)
   ■ STOP (остановка)
   ◀◀ REW (ускоренная перемотка назад)
   ▶ PLAY (воспроизведение)
   ▶▶ FF (ускоренная перемотка вперед)
   ❚❚ PAUSE (пауза)
9. **Рычаг приводного трансфокатора** (стр. 18)
10. **Выключатель NIGHTSHOT** (стр. 41)
11. **Окошко дисплея** (стр. 101)
12. **Кнопка FADER** (стр. 39)
13. **Держатель треноги** (стр. 23)
    Убедитесь, что длина винта треноги менее 6,5 мм. В противном случае Вы не сможете надержно подсоединить треногу, а винт может повредить видеокамеру.

Identifying the parts Опознавание частей



14. **Viewfinder** (p. 16)
15. **Speaker** (p. 26, 27)
16. **LCD screen** (p. 20)
17. **LCD BRIGHT buttons** (p. 20)
18. **OPEN button** (p. 19)
19. **VOLUME buttons** (p. 26)
20. **Lithium battery compartment** (p. 67)
21. **Hook for shoulder strap** (p. 100)
22. **Eyecup**
23. **BATT RELEASE lever** (p. 13)
24. **Hook for shoulder strap** (p. 100)
25. **STANDBY switch** (p. 15)
26. **START/STOP button** (p. 15)
27. **Battery mounting surface**
28. **DC IN jack** (p. 9, 31)

14. **Видоискатель** (стр. 16)
15. **Громкоговоритель** (стр. 26, 27)
16. **Экран ЖКД** (стр. 20)
17. **Кнопки LCD BRIGHT** (стр. 20)
18. **Кнопка OPEN** (стр. 19)
19. **Кнопки VOLUME** (стр. 26)
20. **Отсек литиевой батарейки** (стр. 67)
21. **Скоба для плечевого ремня** (стр. 100)
22. **Окуляр**
23. **Рычаг BATT RELEASE** (стр. 13)
24. **Скоба для плечевого ремня** (стр. 100)
25. **Переключатель STANDBY** (стр. 15)
26. **Кнопка START/STOP** (стр. 15)
27. **Поверхность установки батарейного блока**
28. **Гнездо DC IN** (стр. 9, 31)



29 **COUNTER RESET button** (p. 17)

30 **TIME button** (p. 57)

31 **DATE button** (p. 57)

32 **DISPLAY button** (p. 27)

33 **TITLE button** (p. 53)

34 **END SEARCH button** (p. 29)

35 **PICTURE EFFECT button** (p. 50)

36 **START/STOP MODE switch** (p. 19)

37 **BACK LIGHT button** (p. 37)

38 **PROGRAM AE button** (p. 46)

39 **EXPOSURE button** (p. 51)

40 **Control dial** (p. 32)

41 **MENU button** (p. 32)

29 **Кнопка COUNTER RESET** (стр. 17)

30 **Кнопка TIME** (стр. 57)

31 **Кнопка DATE** (стр. 57)

32 **Кнопка DISPLAY** (стр. 27)

33 **Кнопка TITLE** (стр. 53)

34 **Кнопка END SEARCH** (стр. 29)

35 **Кнопка PICTURE EFFECT** (стр. 50)

36 **Переключатель START/STOP MODE** (стр. 19)

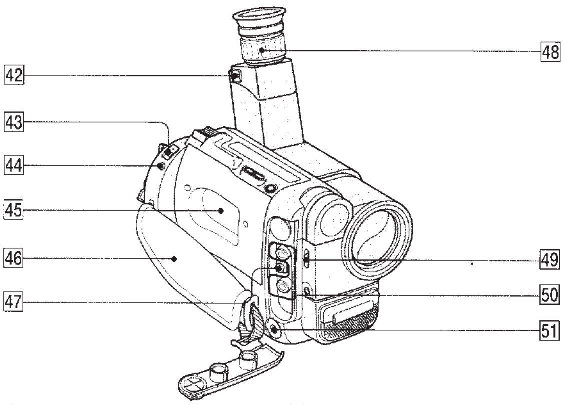
37 **Кнопка BACK LIGHT** (стр. 37)

38 **Кнопка PROGRAM AE** (стр. 46)

39 **Кнопка EXPOSURE** (стр. 51)

40 **Регулировочный диск** (стр. 32)

41 **Кнопка MENU** (стр. 32)



42 **Eyecup RELEASE knob** (p. 78)

43 **EJECT switch** (p. 14)

44 **LANC ⓛ control jack**
ⓛ stands for Local Application Control Bus System. The ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

45 **Cassette compartment** (p. 14)

46 **Grip strap** (p. 22)

47 **RFU DC OUT (RFU adaptor DC output) jack** (p. 63)

48 **Viewfinder lens adjustment ring** (p. 16)

49 **LIGHT switch** (CCD-TRV46E only) (p. 59)

50 **VIDEO/AUDIO jacks** (p. 63)

51 **🎧 (earphone) jack** (p. 27)

42 **Кнопка снятия окуляра** (стр. 78)

43 **Кнопка выброса кассеты EJECT** (стр. 14)

44 **Гнездо управления LANC ⓛ**
ⓛ означает систему канала местного управления. Гнездо управления ⓛ используется для контроля за перемещением ленты видеооборудования и периферийных устройств, подключенных к нему. Данное гнездо имеет такую же функцию, как и разъемы, обозначенные как CONTROL L или REMOTE.

45 **Кассетный отсек** (стр. 14)

46 **Ременной захват** (стр. 22)

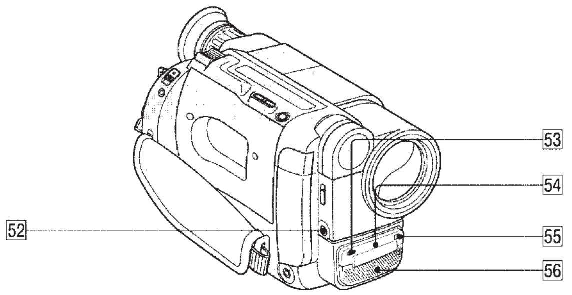
47 **Гнездо RFU DC OUT (выход пост. тока ВЧ-адаптера)** (стр. 63)

48 **Кольцо регулировки объектива видоискателя** (стр. 16)

49 **Переключатель LIGHT** (только CCD-TRV46E) (стр. 59)

50 **Гнезда VIDEO/AUDIO** (стр. 63)

51 **Гнездо 🎧 (наушников)** (стр. 27)



52 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

53 **Camera recording/battery lamp** (p. 15)

54 **NightShot light emitter** (p. 41) **/LASER LINK emitter** (CCD-TRV46E only) (p. 64)

55 **Remote sensor** (CCD-TRV27E/TRV46E only) (p. 98)
Aim the Remote Commander here for remote control.

56 **Microphone**

52 **Гнездо MIC (PLUG IN POWER)**
Для подсоединения внешнего микрофона (не прилагается). Это гнездо допускает подключение микрофона "с выключателем питания".

53 **Лампочка записи камерой/батареи** (стр. 15)

54 **Эмиттер ночной съемки** (стр. 41) / **Излучатель LASER LINK** (только CCD-TRV46E) (стр. 64)

55 **Дистанционный сенсор** (только CCD-TRV27E/TRV46E) (стр. 98)
Для осуществления функции дистанционного управления нацельте ПДУ сюда.

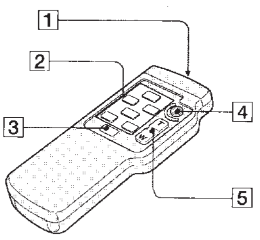
56 **Микрофон**

Remote Commander

–CCD-TRV27E/TRV46E only
The buttons that have the same name on the Remote Commander as on the camcorder function identically.

Пульт дистанционного управления

– Только CCD-TRV27E/TRV46E
Кнопки пульта дистанционного управления, которые имеют одинаковые наименования с кнопками на видеокамере, функционируют идентично.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **Video control buttons** (p. 26)

3 **DISPLAY button** (p. 27)

4 **START/STOP button** (p. 15)

5 **Power zoom button** (p. 18)

1 **Передатчик**
Нацельте в направлении дистанционного датчика для управления видеокамерой после ее включения.

2 **Кнопки видеоконтроля** (стр. 26)

3 **Кнопка DISPLAY** (стр. 27)

4 **Кнопка START/STOP** (стр. 15)

5 **Кнопка приводного трансфокатора** (стр. 18)

Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

To prepare the Remote Commander

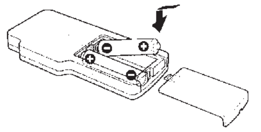
Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Примечания к пульту дистанционного управления

- Держите дистанционный датчик подальше от сильных источников света, как например, прямые солнечные лучи или иллюминация. В противном случае дистанционное управление может не действовать.
- Убедитесь, что между дистанционным датчиком на видеокамере и пультом дистанционного управления нет препятствия.
- Данная видеокамера работает в режиме пульта дистанционного управления VTR2. Режимы пульта дистанционного управления (1, 2 и 3) используются для отличия данной видеокамеры от других КВМ фирмы Sony во избежание неправильной работы дистанционного управления. Если Вы используете другой КВМ фирмы Sony, работающий в режиме VTR2, мы рекомендуем Вам изменить режим пульта дистанционного управления или закрыть дистанционный датчик КВМ черной бумагой.

Для подготовки пульта дистанционного управления

Вставьте две батарейки R6 (размером AA) согласуя знаки + и – на батарейках со схемой внутри батарейного отсека.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

Примечание к сроку службы батареек

Батареек для пульта дистанционного управления хватает приблизительно на 6 месяцев при нормальных условиях эксплуатации. Когда батарейки станут слабыми или полностью разрядятся, пульт дистанционного управления не будет работать.

Во избежание повреждения из-за возможной утечки из батареек.

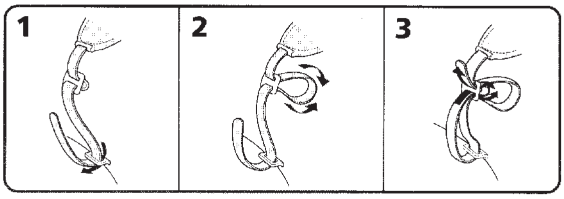
Удалите батарейки, если Вы не будете использовать пульт дистанционного управления в течение длительного времени.

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap.

Прикрепление плечевого ремня

Прикрепите прилагаемый плечевой ремень к скобам для плечевого ремня.



To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.
When NIGHTSHOT is set to ON, you cannot watch the demonstration.

To enter demo mode

(1) Eject the cassette and set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ► set the POWER switch to CAMERA.

To exit demo mode

(1) Set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ■ set the POWER switch to CAMERA.

Для просмотра демонстрации

Вы можете начать демонстрацию с помощью установки DEMO MODE в системе меню.
Вы также можете начать демонстрацию, выполнив следующую операцию.
Если индикация NIGHTSHOT установлена в положение ON, Вы не сможете наблюдать демонстрацию.

Для ввода демонстрационного режима

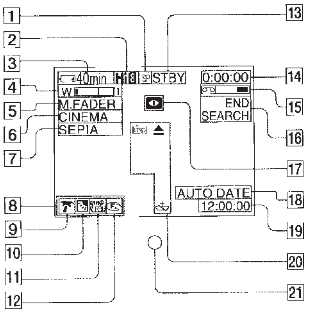
(1) Удалите кассету и установите выключатель POWER в положение PLAYER.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Нажимая вниз ►, установите выключатель POWER в положение CAMERA.

Для выхода из демонстрационного режима

(1) Удалите кассету и установите выключатель POWER в положениe PLAYER.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Удерживая ■ внизу, установите выключатель POWER в положение CAMERA.

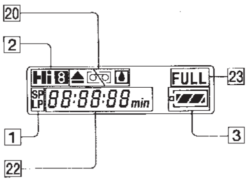
Operation indicators

Viewfinder/Видоискатель



Рабочие индикаторы

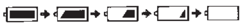
Display window/Окошко дисплея



[1] **Recording mode indicator** (p. 35)/
Mirror mode indicator (p. 21)

[2] **Playing back or recording in Hi8 format** (CCD-TRV46E only) (p. 70)

[3] **Remaining battery time indicator**



[4] **Exposure indicator** (p. 51)/
Zoom indicator (p. 18)

[5] **FADER indicator** (p. 39)

[6] **Wide mode indicator** (p. 43)

[7] **PICTURE EFFECT indicator** (p. 50)

[8] **LCD BRIGHT indicator** (p. 26)/
VOLUME indicator (p. 26)

[9] **PROGRAM AE indicator** (p. 45)

[10] **Backlight indicator** (p. 37)

[11] **SteadyShot off indicator** (CCD-TRV46E only) (p. 62)

[12] **Manual focusing** (p. 48)

[1] **Индикатор рабочего режима** (стр. 35)/
Индикатор зеркального режима (стр. 21)

[2] **Воспроизведение или запись в формате Hi8** (только CCD-TRV46E) (стр. 70)

[3] **Индикатор оставшегося времени заряда батарейного блока**

[4] **Индикатор экспозиции** (стр. 51)/
Индикатор трансфокатора (стр. 18)

[5] **Индикатор FADER** (стр. 39)

[6] **Индикатор широкоформатного режима** (стр. 43)

[7] **Индикатор PICTURE EFFECT** (стр. 50)

[8] **Индикатор LCD BRIGHT** (стр. 26)/
Индикатор VOLUME (стр. 26)

[9] **Индикатор PROGRAM AE** (стр. 45)

[10] **Индикатор задней подсветки** (стр. 37)

[11] **Индикатор устойчивой съемки** (только CCD-TRV46E) (стр. 62)

[12] **Ручная фокусировка** (стр. 48)

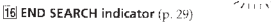
(to be continued)

(Продолжается)

[13] **Standby/Recording mode indicator** (p. 15)/
Video control mode indicator (p. 28)

[14] **Tape counter** (p. 17)/
Self-diagnosis functions indicator (p. 89)/
5SEC mode indicator (p. 19)

[15] **Remaining tape indicator**



[16] **END SEARCH indicator** (p. 29)

[17] **NIGHTSHOT indicator** (p. 41)

[18] **AUTO DATE indicator** (p. 15)/
Date indicator (p. 57)

[19] **Time indicator** (p. 57)

[20] **Warning indicators** (p. 103)

[21] **Recording lamp** (p. 15)

[22] **Date or time indicator** (p. 57)/
Tape counter (p. 17)/
Self-diagnosis functions indicator (p. 89)/
Remaining battery time indicator

[23] **FULL charge indicator** (p. 9)

[13] **Индикатор режима готовности/режима записи** (стр. 15)/**Индикатор режима видеоконтроля** (стр. 28)

[14] **Индикатор счетчика ленты** (стр. 17)/
Индикатор функции самодиагностики (стр.90)/**Индикатор режима 5SEC** (стр. 19)

[15] **Индикатор оставшейся ленты**

[16] **Индикатор END SEARCH** (стр. 29)

[17] **Индикатор NIGHTSHOT** (стр. 41)

[18] **Индикатор AUTO DATE** (стр. 15)/
Индикатор даты (стр. 57)

[19] **Индикатор времени** (стр. 57)

[20] **Предупреждающие индикаторы** (стр. 103)

[21] **Лампочка записи** (стр. 15)

[22] **Индикатор даты или времени** (стр. 57)/
Счетчик ленты (стр. 17)/**Индикатор функции** (стр. 90)/**Индикатор времени оставшегося заряда батарейного блока**

[23] **Индикатор зарядки FULL** (стр. 9)

Warning indicators

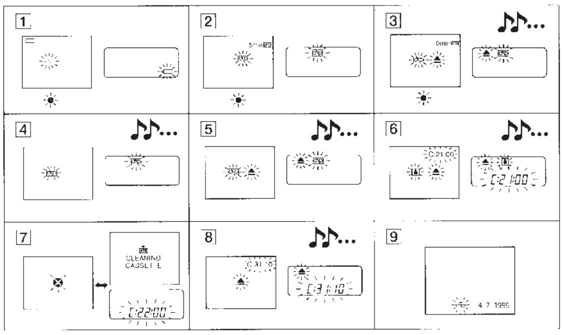
If indicators flash in the viewfinder or in the display window, check the following:

♪♪... : you can hear the beep sound when the BEEP is set to ON.

Предупреждающие индикаторы

Если индикаторы мигают или предупреждающие сообщения появляются на экране ЖКД или в видоискателе, то проверьте следующее:

♪♪... :Вы можете слышать зуммерный звуковой сигнал, когда функция BEEP установлена на ON в системе меню.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.**

7 **The video heads may be contaminated.**

8 **Some other trouble has occurred.**
Use the self-diagnosis function (p. 89).
If the display does not disappear, contact your Sony dealer or local authorized Sony service facility.

9 **The lithium battery is weak or is not installed.**

1 **Батарейный блок слабый или полностью разряженный**
Медленное мигание: Батарейный блок слабый.
Быстрое мигание: Батарейный блок полностью разряженный.

2 **Лента приближается к концу.**
Медленное мигание.

3 **Лента закончилась.**
Мигание становится быстрым.

4 **Лента не вставлена.**

5 **На кассете нет лепестка (красная метка).**

6 **Произошла конденсация влаги.**

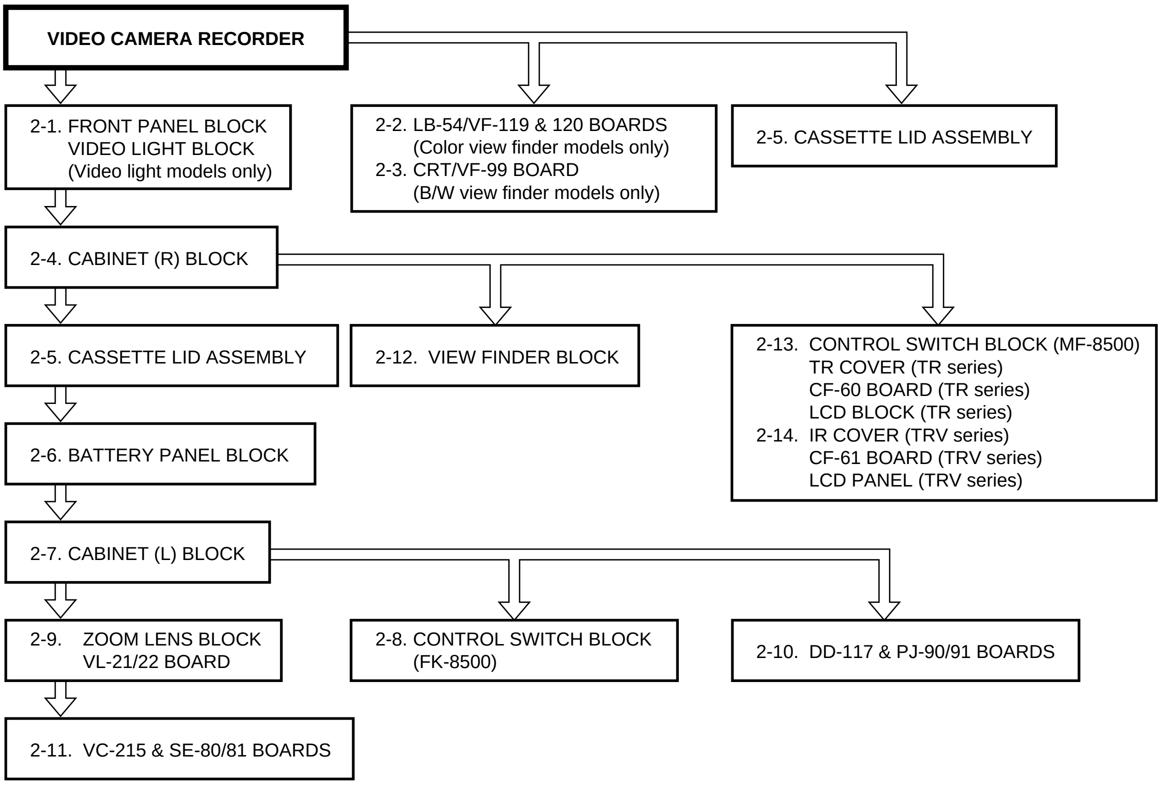
7 **Видеоголовки возможно загрязнены.**

8 **Имеется какая-либо другая проблема.**
Используйте функцию самодиагностики (стр. 90).
Если дисплей не исчезает, то свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием.

9 **Литиевая батарейка слабая или не установлена.**

SECTION 2
DISASSEMBLY

The equipment can be removed using the following procedure.

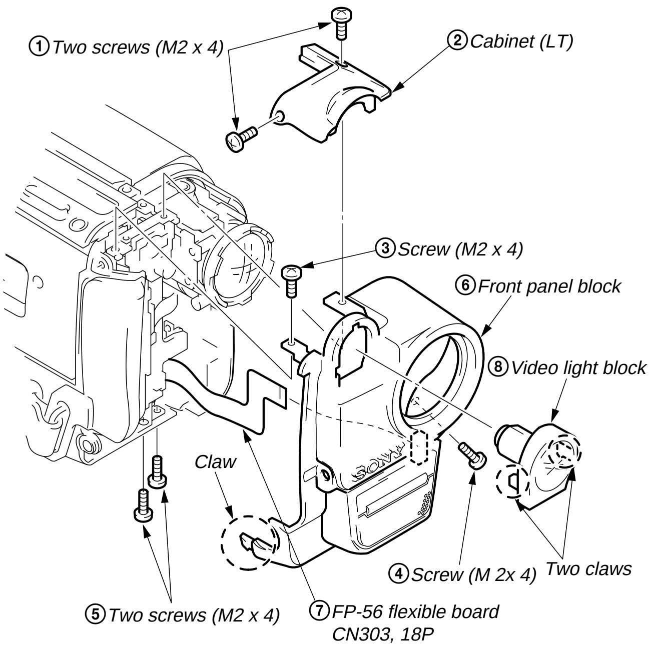

VIDEO CAMERA RECORDER
2-1. FRONT PANEL BLOCK
VIDEO LIGHT BLOCK
(Video light models only)
2-2. LB-54/VF-119 & 120 BOARDS
(Color view finder models only)
2-3. CRT/VF-99 BOARD
(B/W view finder models only)
2-5. CASSETTE LID ASSEMBLY
2-4. CABINET (R) BLOCK
2-5. CASSETTE LID ASSEMBLY
2-12. VIEW FINDER BLOCK
2-13. CONTROL SWITCH BLOCK (MF-8500)
TR COVER (TR series)
CF-60 BOARD (TR series)
LCD BLOCK (TR series)
2-14. IR COVER (TRV series)
CF-61 BOARD (TRV series)
LCD PANEL (TRV series)
2-6. BATTERY PANEL BLOCK
2-7. CABINET (L) BLOCK
2-9. ZOOM LENS BLOCK
VL-21/22 BOARD
2-8. CONTROL SWITCH BLOCK
(FK-8500)
2-10. DD-117 & PJ-90/91 BOARDS
2-11. VC-215 & SE-80/81 BOARDS

NOTE : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL OF FRONT PANEL BLOCK AND VIDEO LIGHT BLOCK

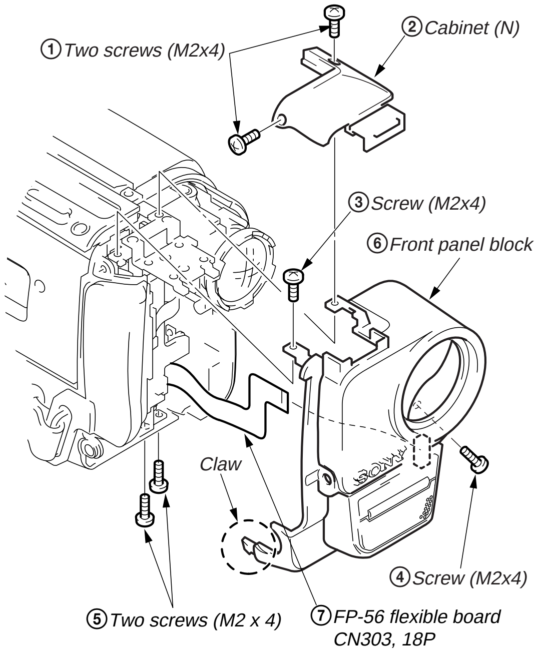
—Video light models—

CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E


① Two screws (M2 x 4)
② Cabinet (LT)
③ Screw (M2 x 4)
⑥ Front panel block
⑧ Video light block
Claw
④ Screw (M 2x 4)
Two claws
⑤ Two screws (M2 x 4)
⑦ FP-56 flexible board
CN303, 18P

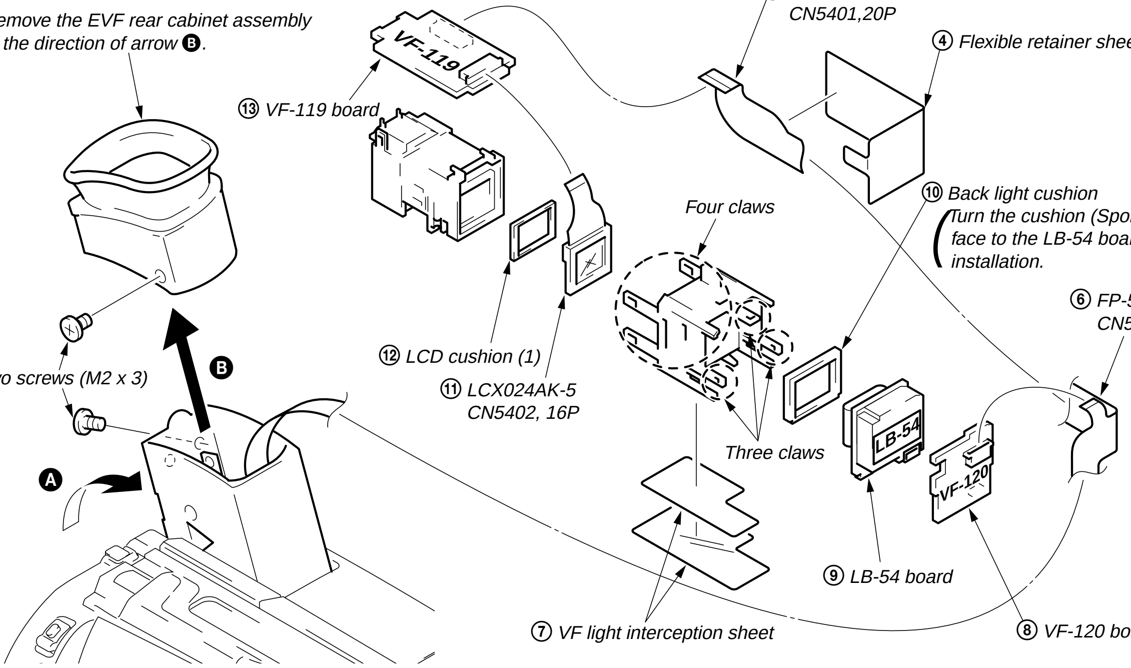
—No video light models—

CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP


① Two screws (M2x4)
② Cabinet (N)
③ Screw (M2x4)
⑥ Front panel block
Claw
④ Screw (M2x4)
⑤ Two screws (M2 x 4)
⑦ FP-56 flexible board
CN303, 18P

2-2. REMOVAL OF LB-54, VF-119 AND VF-120 BOARDS (Color view finder model CCD-TR516E)

① *Tilt-up the EVF block to the direction of arrow* **A**.



③ *Remove the EVF rear cabinet assembly to the direction of arrow* **B**.

② *Two screws (M2 x 3)*

⑬ *VF-119 board*

⑫ *LCD cushion (1)*

⑪ *LCX024AK-5 CN5402, 16P*

⑤ *FP-57 flexible board CN5401,20P*

④ *Flexible retainer sheet*

Four claws

⑩ *Back light cushion* (*Turn the cushion (Sponge rubber) face to the LB-54 board side for installation.*)

⑥ *FP-57 flexible board CN5301,8P*

Three claws

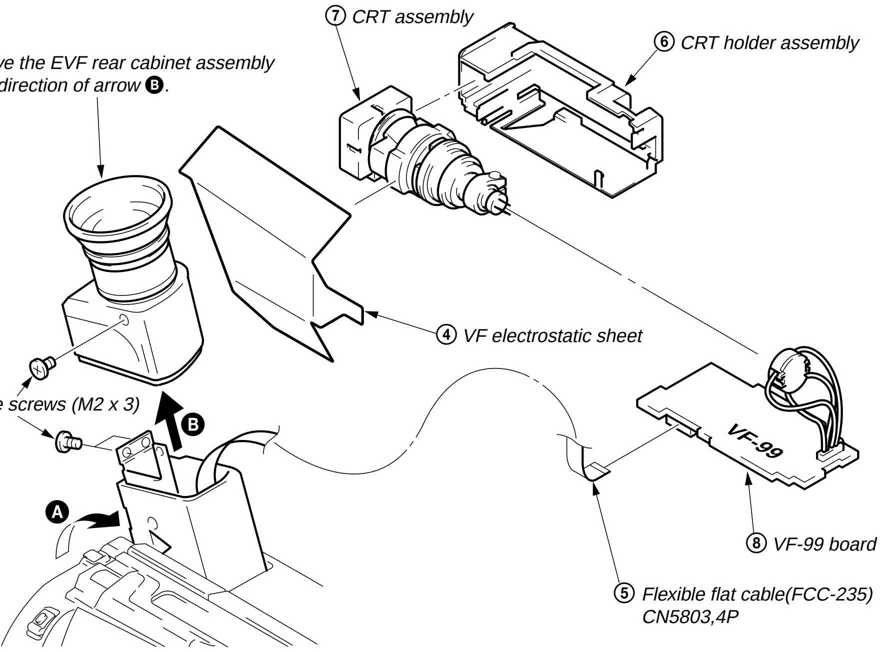
⑨ *LB-54 board*

⑦ *VF light interception sheet*

⑧ *VF-120 board*

2-3. REMOVAL OF VF-99 AND CRT ASSEMBLY (B/W view finder model CCD-TR315E/TR415E/TR425E/TR515E/TR713E and TRV series)

① *Tilt-up the EVF block to the direction of arrow* **A**.



⑦ *CRT assembly*

⑥ *CRT holder assembly*

③ *Remove the EVF rear cabinet assembly to the direction of arrow* **B**.

④ *VF electrostatic sheet*

② *Three screws (M2 x 3)*

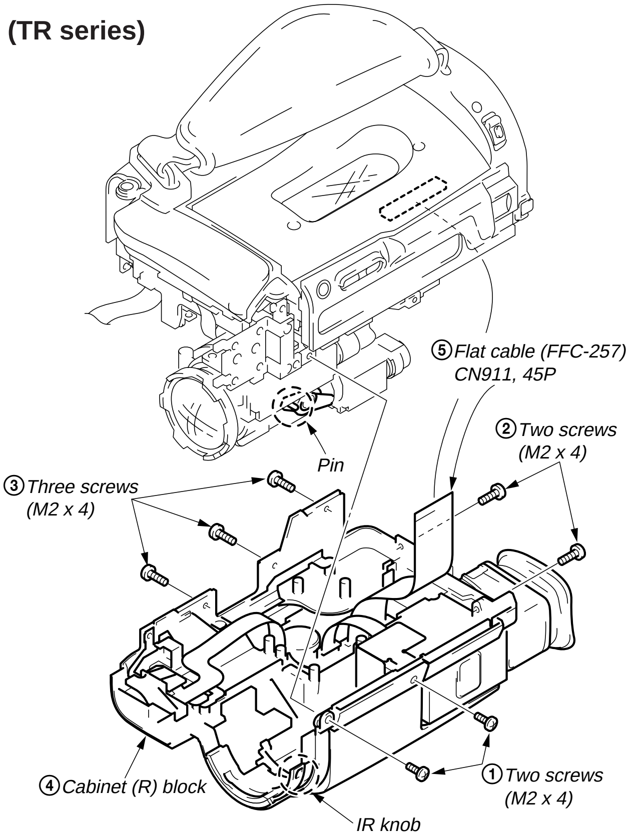
⑧ *VF-99 board*

⑤ *Flexible flat cable(FCC-235) CN5803,4P*

2-4. REMOVAL OF CABINET (R) BLOCK

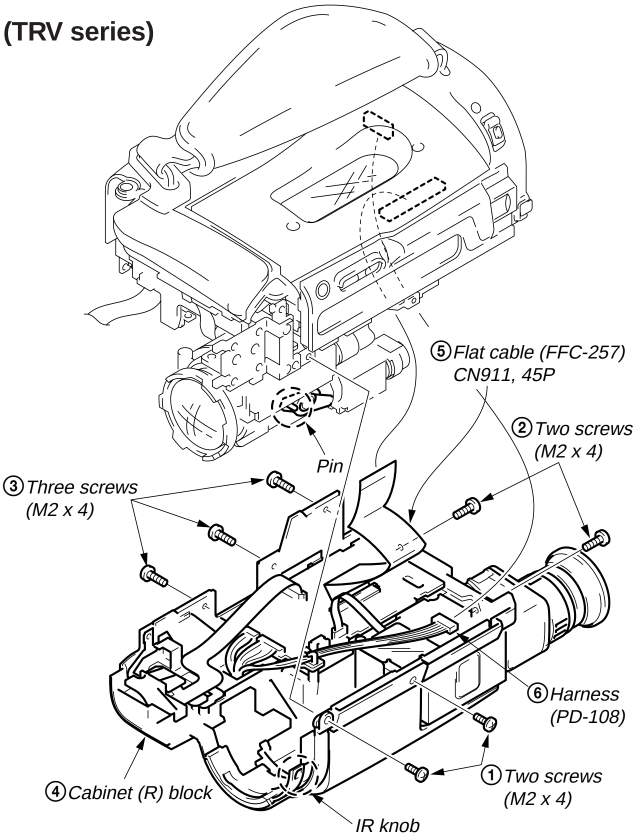
Note : *Be sure to that the pin of the Lens assembly is put into the hole of the IR knob when attaching.*

(TR series)



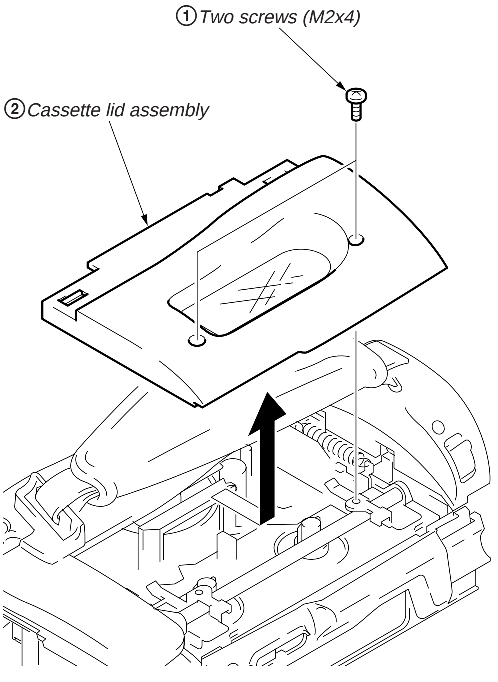
⑤Flat cable (FFC-257)
CN911, 45P
②Two screws
(M2 x 4)
Pin
③Three screws
(M2 x 4)
④Cabinet (R) block
①Two screws
(M2 x 4)
IR knob

(TRV series)



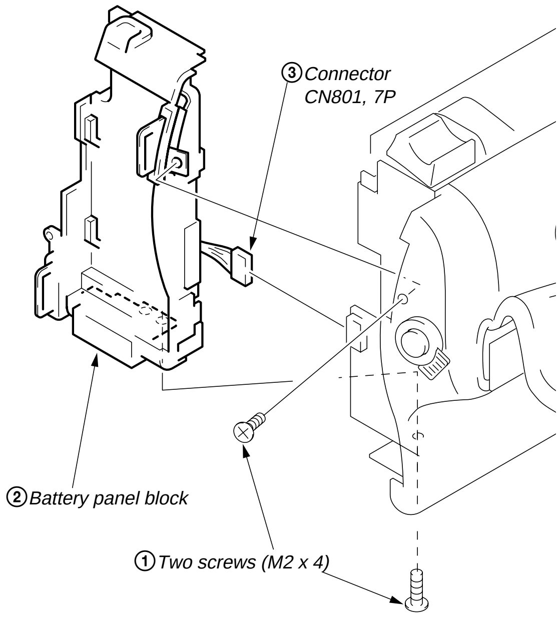
⑤Flat cable (FFC-257)
CN911, 45P
②Two screws
(M2 x 4)
Pin
③Three screws
(M2 x 4)
⑥Harness
(PD-108)
④Cabinet (R) block
①Two screws
(M2 x 4)
IR knob

2-5. REMOVAL OF CASSETTE LID ASSEMBLY



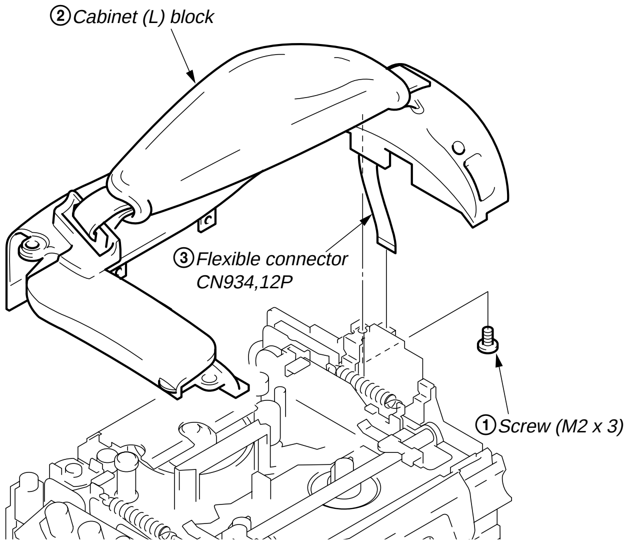
①Two screws (M2x4)
②Cassette lid assembly

2-6. REMOVAL OF BATTERY PANEL BLOCK



③Connector
CN801, 7P
②Battery panel block
①Two screws (M2 x 4)

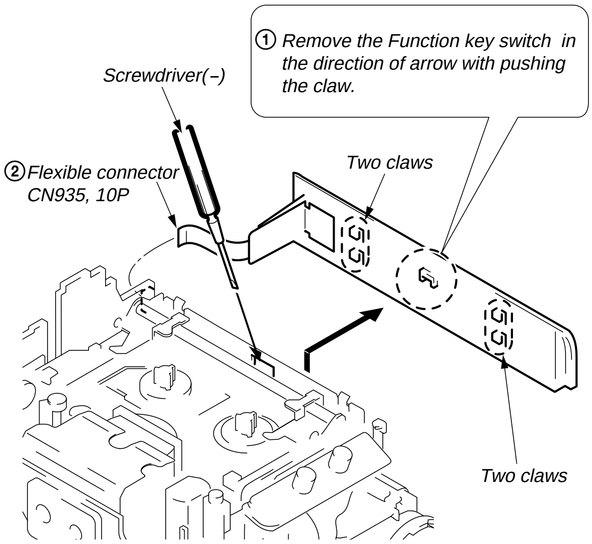
2-7. REMOVAL OF CABINET (L) BLOCK



②Cabinet (L) block
③Flexible connector CN934,12P
①Screw (M2 x 3)

2-8. REMOVAL OF CONTROL SWITCH BLOCK

Function Key Switch (FK-8500)

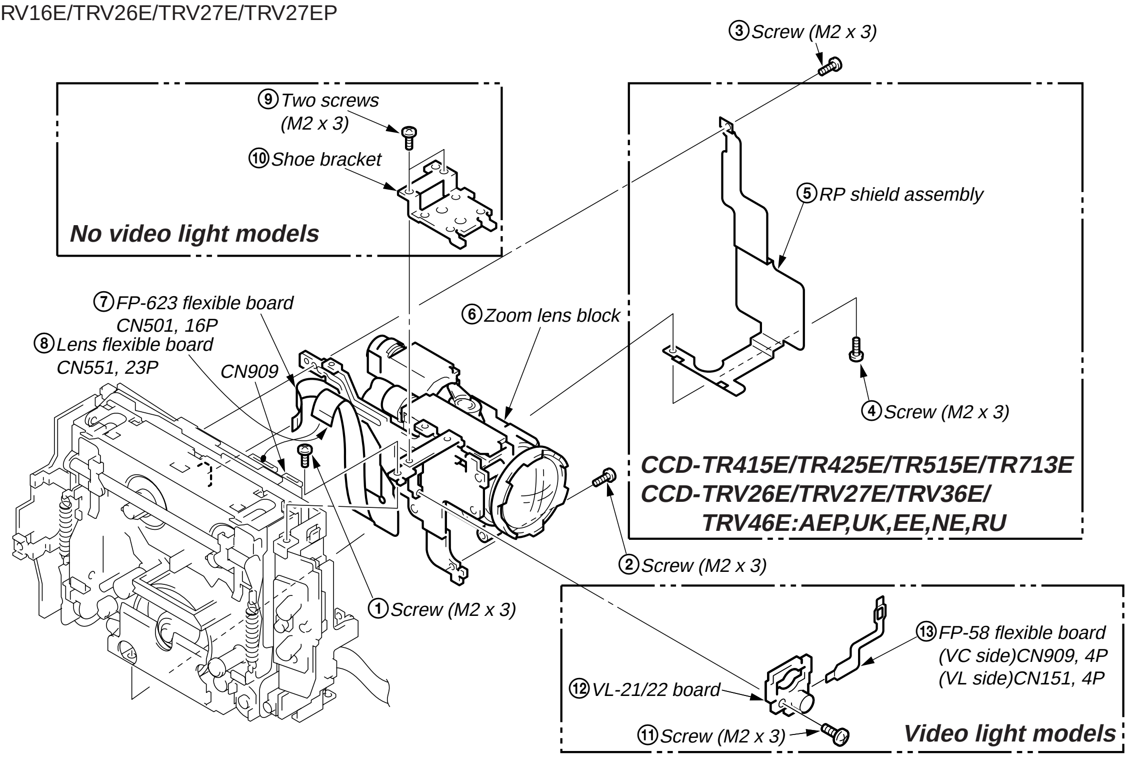


① Remove the Function key switch in the direction of arrow with pushing the claw.
Screwdriver(−)
②Flexible connector CN935, 10P
Two claws
Two claws

2-9. REMOVAL OF ZOOM LENS BLOCK AND VL-21/22 BOARD

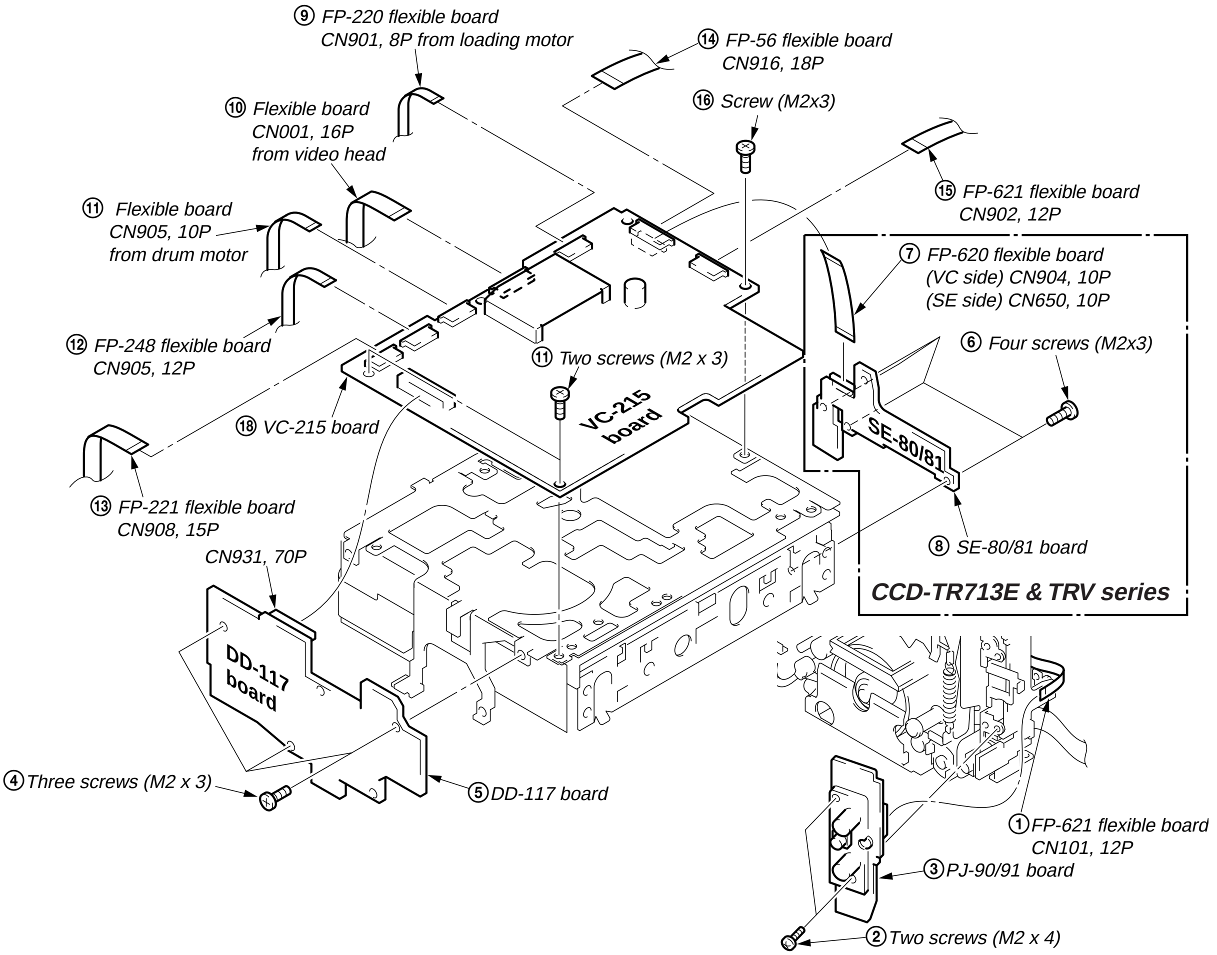
—Video light models—
CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E

—No video light models—
CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP



③Screw (M2 x 3)
⑨Two screws (M2 x 3)
⑩Shoe bracket
No video light models
⑤RP shield assembly
⑦FP-623 flexible board CN501, 16P
⑧Lens flexible board CN551, 23P
CN909
⑥Zoom lens block
④Screw (M2 x 3)
CCD-TR415E/TR425E/TR515E/TR713E
CCD-TRV26E/TRV27E/TRV36E/
TRV46E:AEP,UK,EE,NE,RU
②Screw (M2 x 3)
①Screw (M2 x 3)
⑬FP-58 flexible board (VC side)CN909, 4P (VL side)CN151, 4P
⑫VL-21/22 board
⑪Screw (M2 x 3)
Video light models

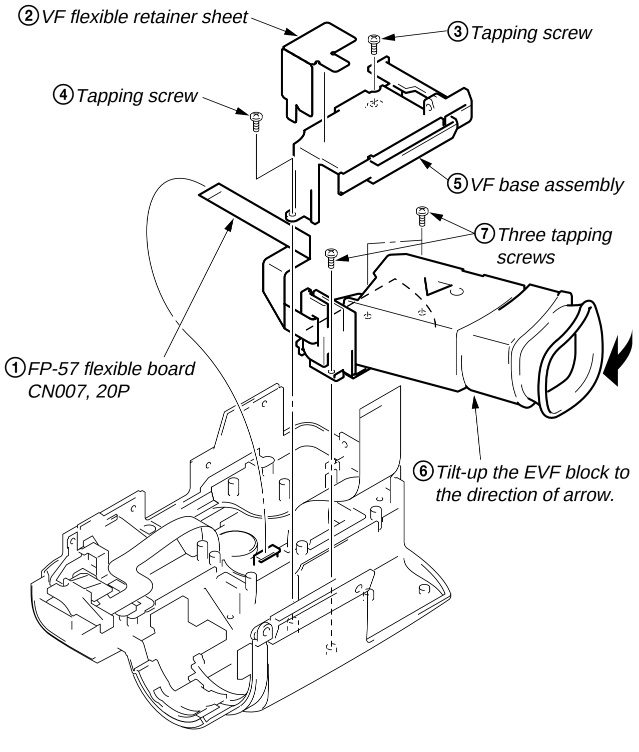
2-10. REMOVAL OF VC-215, SE-80/81, DD-117 AND PJ-90/91 BOARDS


⑨ FP-220 flexible board
CN901, 8P from loading motor
⑭ FP-56 flexible board
CN916, 18P
⑩ Flexible board
CN001, 16P
from video head
⑯ Screw (M2x3)
⑮ FP-621 flexible board
CN902, 12P
⑪ Flexible board
CN905, 10P
from drum motor
⑦ FP-620 flexible board
(VC side) CN904, 10P
(SE side) CN650, 10P
⑥ Four screws (M2x3)
⑫ FP-248 flexible board
CN905, 12P
⑪ Two screws (M2 x 3)
VC-215
board
SE-80/81
⑱ VC-215 board
⑬ FP-221 flexible board
CN908, 15P
⑧ SE-80/81 board
CN931, 70P
CCD-TR713E & TRV series
DD-117
board
④ Three screws (M2 x 3)
⑤ DD-117 board
① FP-621 flexible board
CN101, 12P
③ PJ-90/91 board
② Two screws (M2 x 4)

2-11. REMOVAL OF VIEW FINDER BLOCK

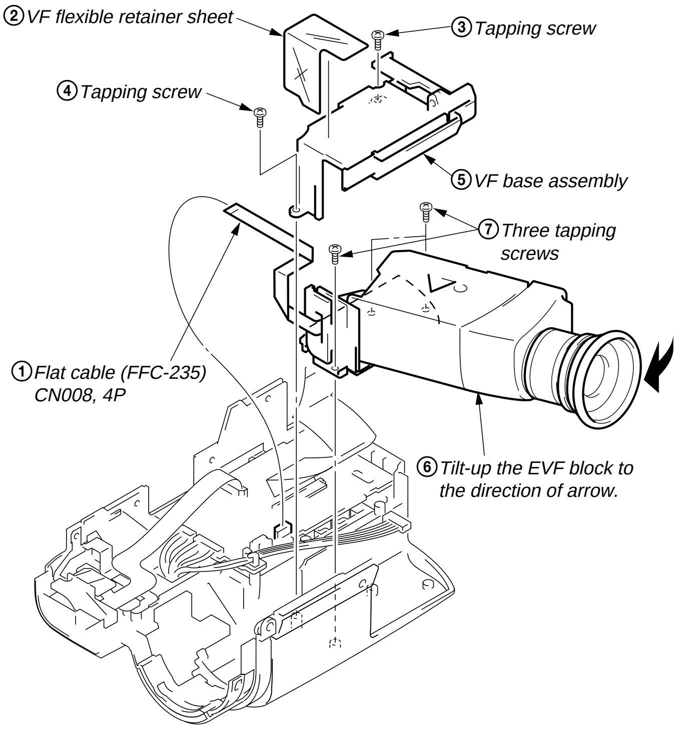
—Color view finder—

CCD-TR516E

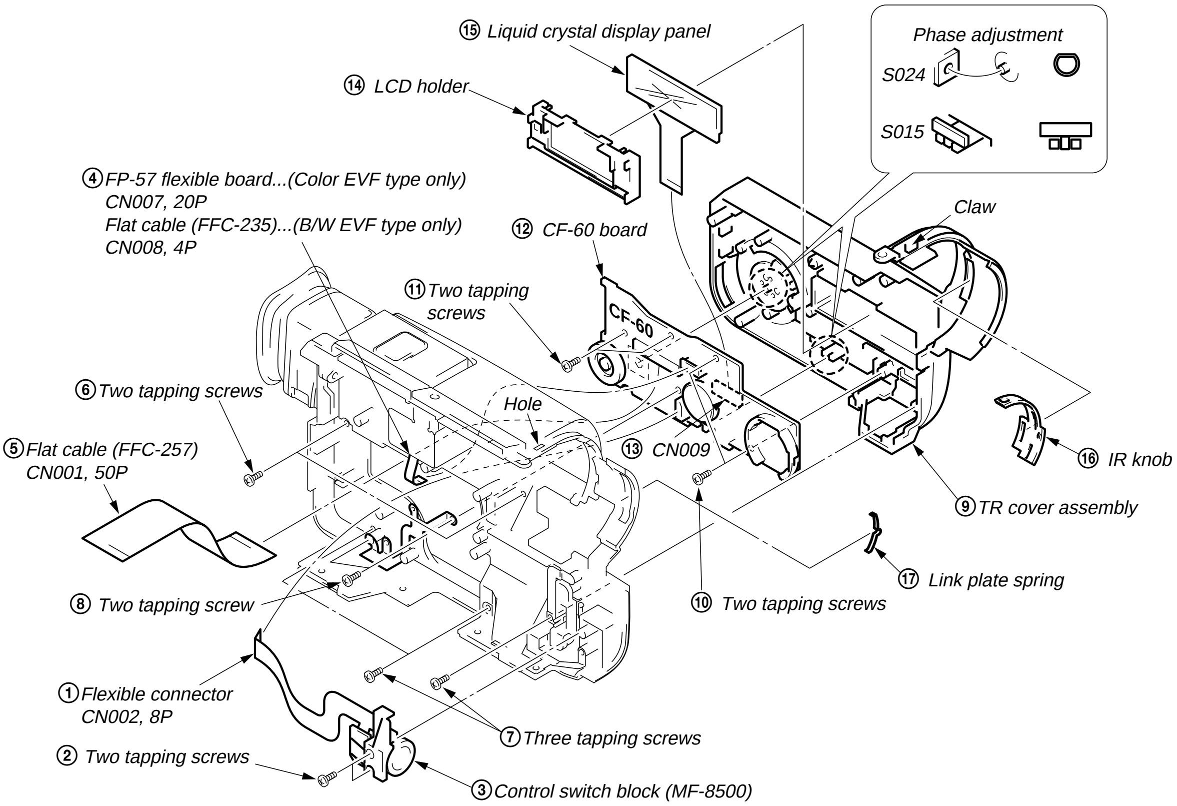

② VF flexible retainer sheet
③ Tapping screw
④ Tapping screw
⑤ VF base assembly
⑦ Three tapping screws
① FP-57 flexible board
CN007, 20P
⑥ Tilt-up the EVF block to the direction of arrow.

—B/W view finder—

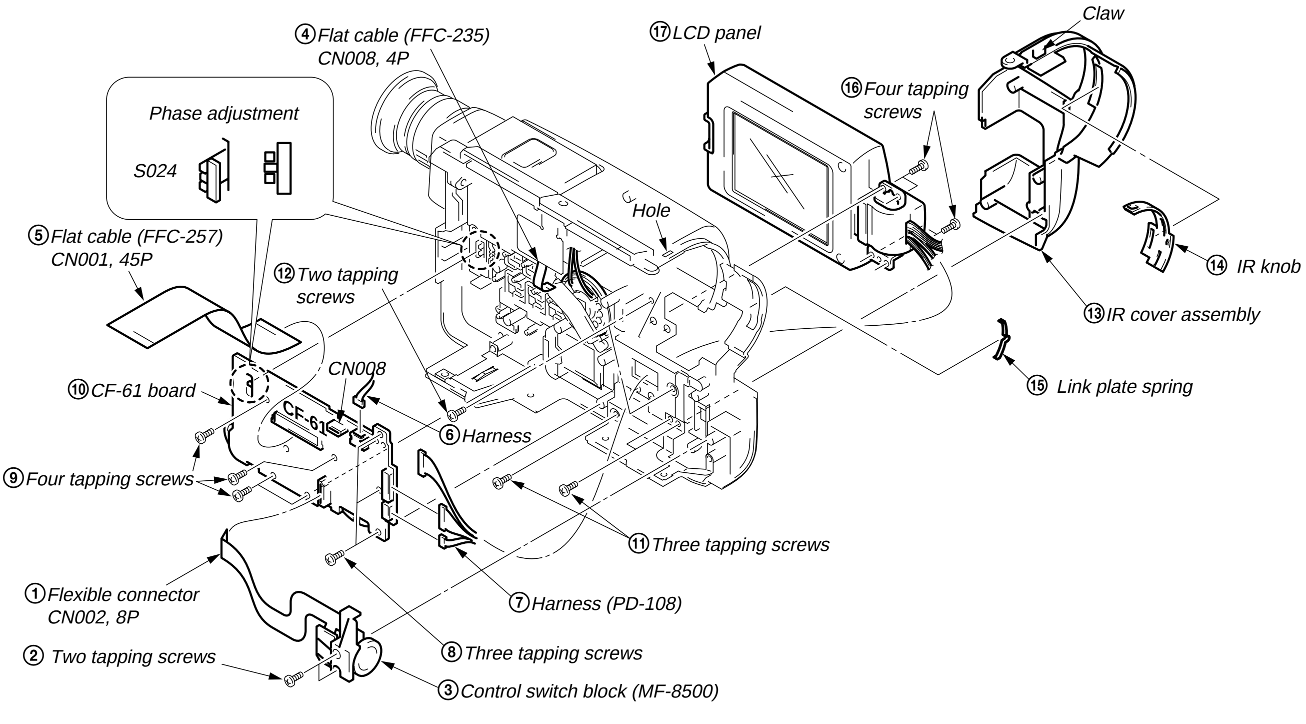
CCD-TR315E/TR415E/TR425E/TR515E/TR713E and TRV series


② VF flexible retainer sheet
③ Tapping screw
④ Tapping screw
⑤ VF base assembly
⑦ Three tapping screws
① Flat cable (FFC-235)
CN008, 4P
⑥ Tilt-up the EVF block to the direction of arrow.

2-12. REMOVAL OF TR COVER, CF-60 BOARD AND DISPLAY PANEL ...(TR series)


⑮ Liquid crystal display panel
⑭ LCD holder
Phase adjustment
S024
S015
Claw
④FP-57 flexible board...(Color EVF type only)
CN007, 20P
Flat cable (FFC-235)...(B/W EVF type only)
CN008, 4P
⑫ CF-60 board
CF-60
⑪Two tapping screws
⑥Two tapping screws
Hole
⑤Flat cable (FFC-257)
CN001, 50P
⑬ CN009
⑯ IR knob
⑨TR cover assembly
⑰ Link plate spring
⑧ Two tapping screw
⑩ Two tapping screws
①Flexible connector
CN002, 8P
⑦Three tapping screws
② Two tapping screws
③Control switch block (MF-8500)

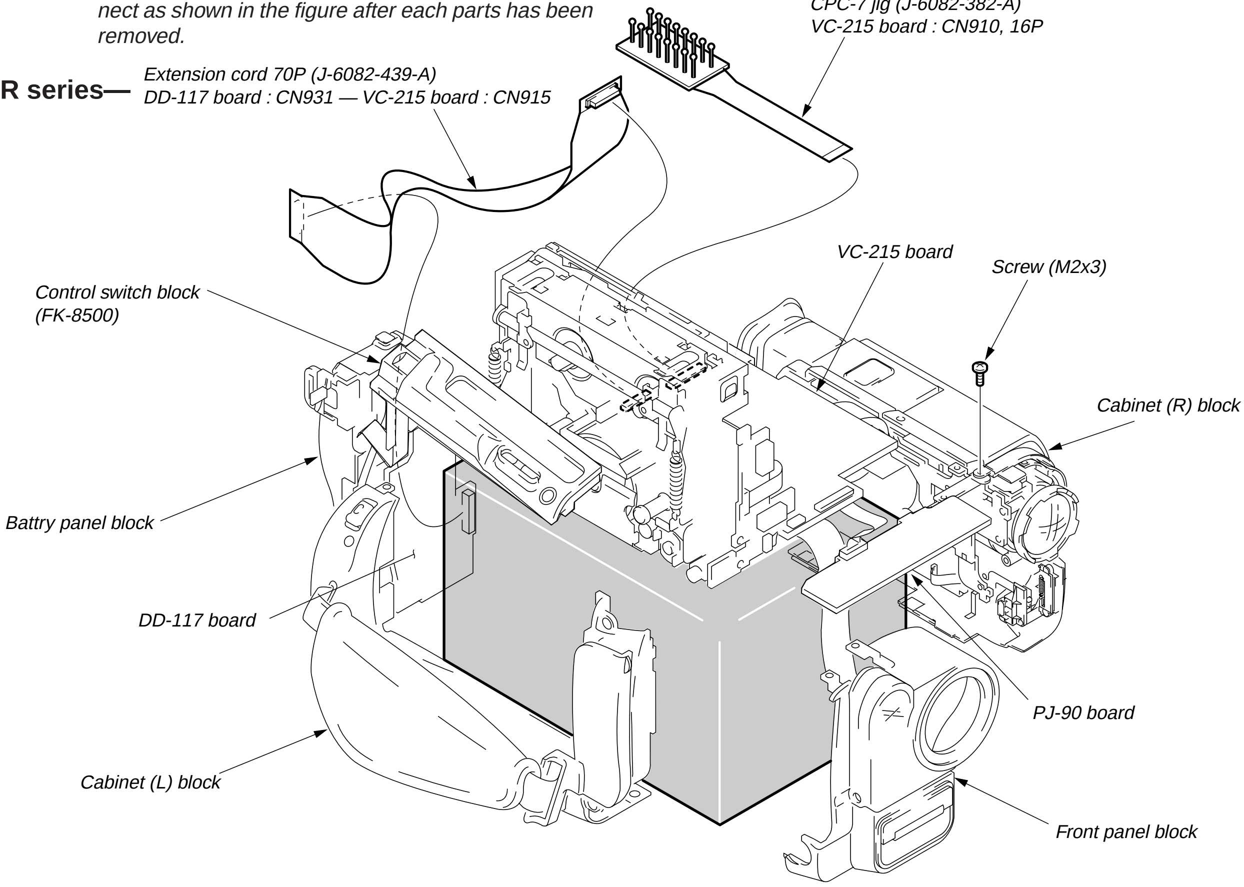
2-13. REMOVAL OF IR COVER, CF-61 BOARD AND LCD PANEL...(TRV series)


Claw
④Flat cable (FFC-235)
CN008, 4P
⑰LCD panel
⑯Four tapping screws
Phase adjustment
S024
Hole
⑤Flat cable (FFC-257)
CN001, 45P
⑫Two tapping screws
⑭ IR knob
⑬IR cover assembly
CN008
⑩CF-61 board
CF-61
⑮ Link plate spring
⑥Harness
⑨Four tapping screws
⑪Three tapping screws
①Flexible connector
CN002, 8P
⑦Harness (PD-108)
② Two tapping screws
⑧Three tapping screws
③Control switch block (MF-8500)

2-14. SERVICE POSITION

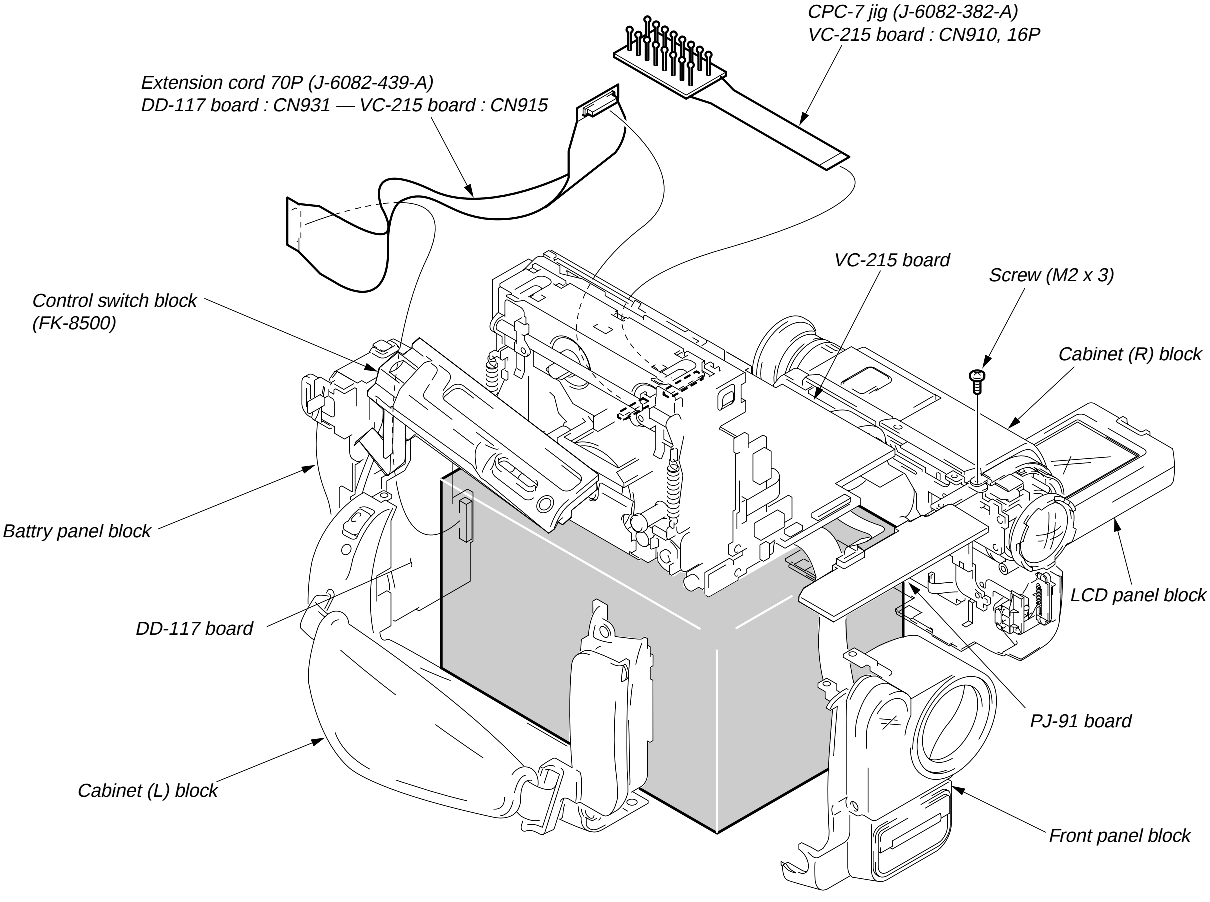
Preparation : *Refer to previous section "DISASSEMBLY", and connect as shown in the figure after each parts has been removed.*

—TR series—



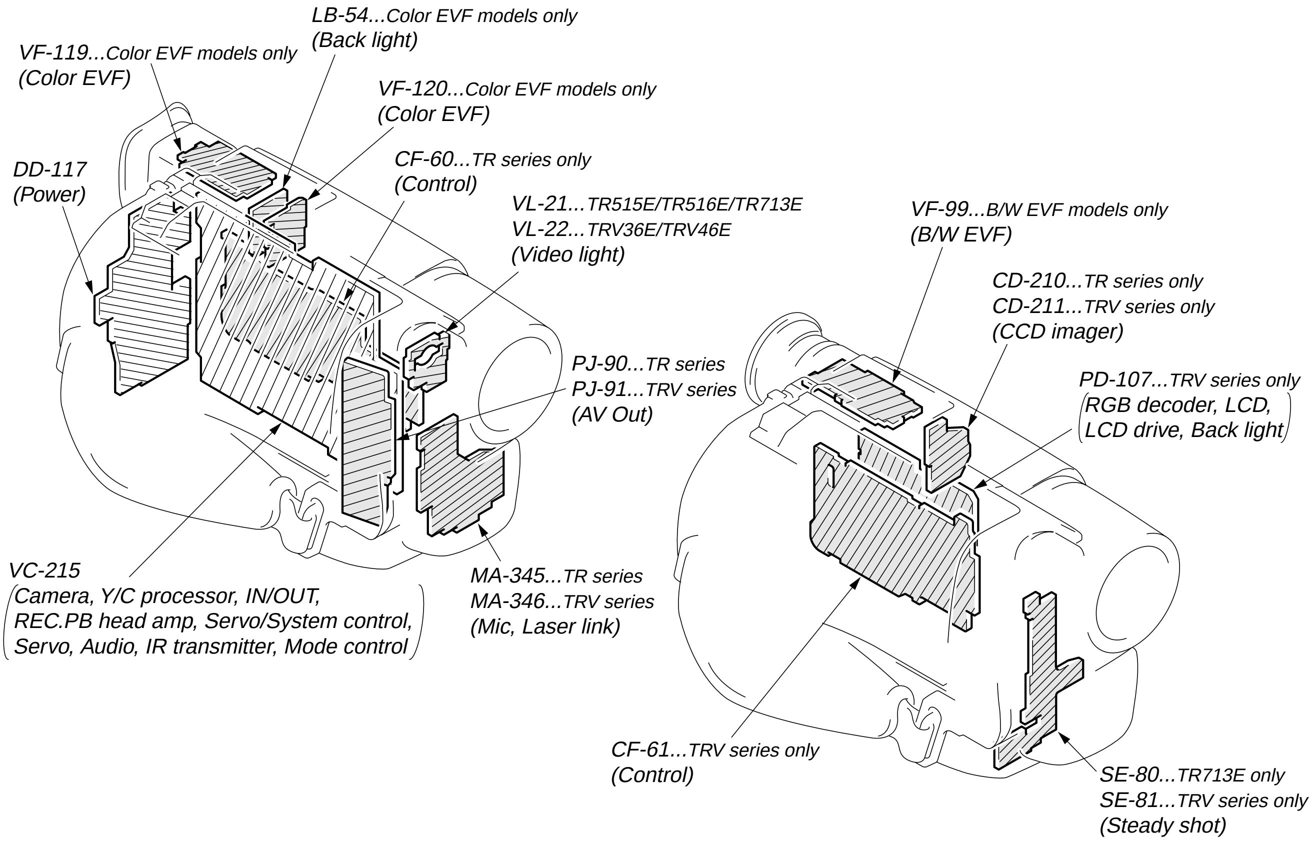
Extension cord 70P (J-6082-439-A)
DD-117 board : CN931 — VC-215 board : CN915
CPC-7 jig (J-6082-382-A)
VC-215 board : CN910, 16P
VC-215 board
Screw (M2x3)
Control switch block
(FK-8500)
Cabinet (R) block
Battry panel block
DD-117 board
PJ-90 board
Cabinet (L) block
Front panel block

—TRV series—

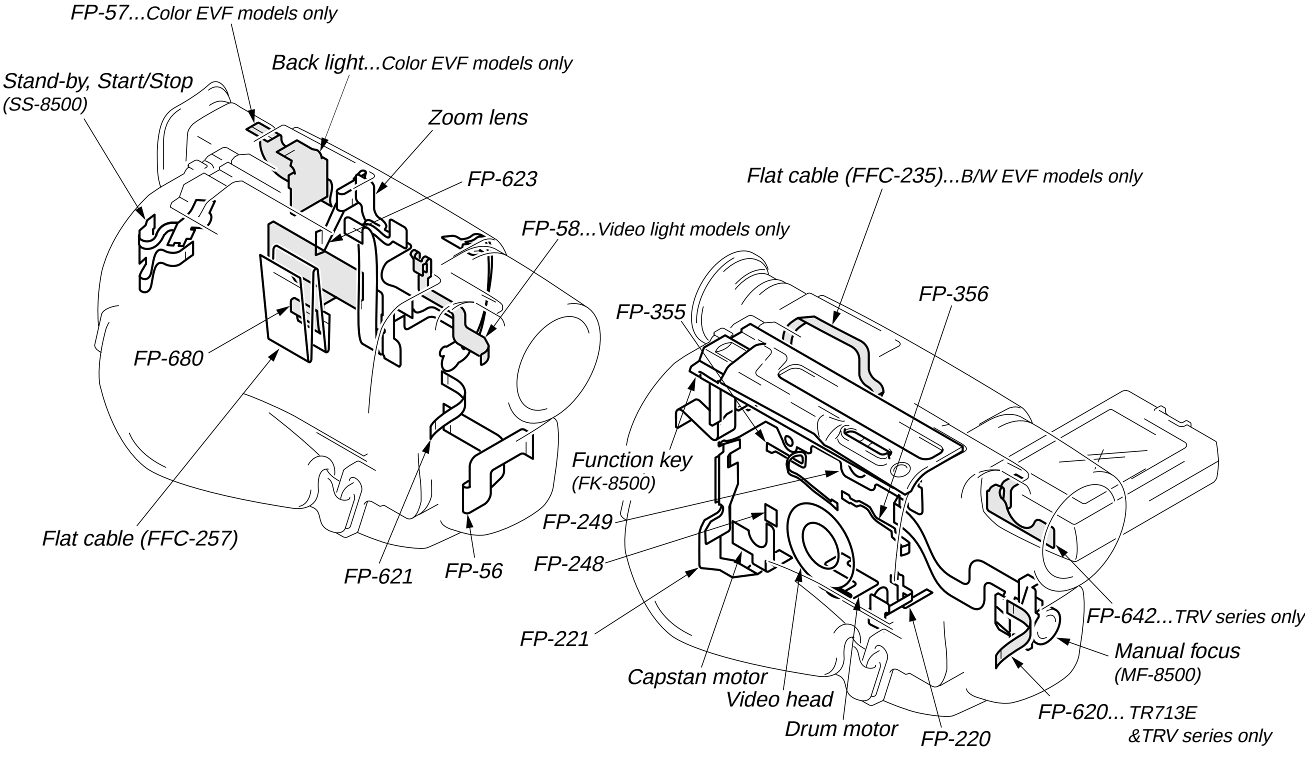


CPC-7 jig (J-6082-382-A)
VC-215 board : CN910, 16P
Extension cord 70P (J-6082-439-A)
DD-117 board : CN931 — VC-215 board : CN915
VC-215 board
Screw (M2 x 3)
Control switch block
(FK-8500)
Cabinet (R) block
Battry panel block
LCD panel block
DD-117 board
PJ-91 board
Cabinet (L) block
Front panel block

2-15. CIRCUIT BOARDS LOCATION


LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
CF-60...TR series only
(Control)
DD-117
(Power)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)
VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
RGB decoder, LCD,
LCD drive, Back light
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)

2-16. FLEXIBLE BOARDS AND FLAT CABLES LOCATION


FP-57...Color EVF models only
Back light...Color EVF models only
Stand-by, Start/Stop
(SS-8500)
Zoom lens
FP-623
Flat cable (FFC-235)...B/W EVF models only
FP-58...Video light models only
FP-356
FP-355
FP-680
Function key
(FK-8500)
FP-249
Flat cable (FFC-257)
FP-248
FP-621
FP-56
FP-642...TRV series only
FP-221
Manual focus
(MF-8500)
Capstan motor
Video head
Drum motor
FP-220
FP-620...TR713E
&TRV series only

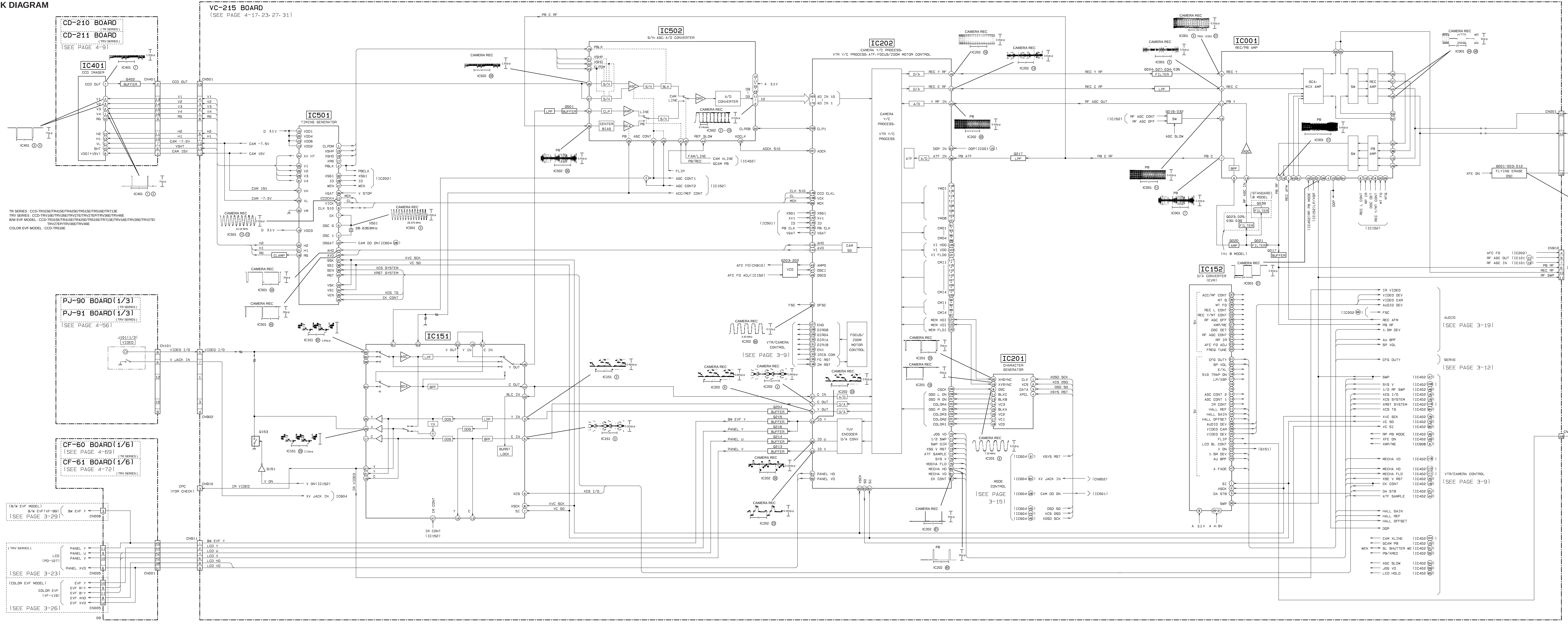
SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

CD-210 BOARD
CD-211 BOARD
(SEE PAGE 4-9)
IC401
VC-215 BOARD
(SEE PAGE 4-17, 19, 23, 27, 31, 35, 38, 41, 47, 49)
IC501
IC551
IC552
SE-80 BOARD
SE-81 BOARD
(SEE PAGE 4-53)
IC451
PJ-90 BOARD
PJ-91 BOARD
(SEE PAGE 4-56)
IC151
IC502
IC202
IC201
IC152
IC001
IC401
IC321
IC301
IC751
MA-345 BOARD(1/2)
MA-346 BOARD(1/2)
(SEE PAGE 4-61)
IC301
CONTROL SWITCH BLOCK (CF-60)(1/2)
(SEE PAGE 4-69)
CONTROL SWITCH BLOCK (CF-61)(1/2)
(SEE PAGE 4-72)
IC371
SP901 SPEAKER
VF-99 BOARD
(SEE PAGE 4-93)
IC901
PD-107 BOARD(1/2)
(SEE PAGE 4-83, 86, 89, 90)
IC5501
IC5502
IC5601
IC5701
VF-119 BOARD
(SEE PAGE 4-96)
IC5402
IC5401
IC5404
VF-120 BOARD
(SEE PAGE 4-100)
IC5301
LB-54 BOARD
(SEE PAGE 4-100)
VL-21 BOARD
VL-22 BOARD
(SEE PAGE 4-45)
MA-345 BOARD(1/2)
MA-346 BOARD(1/2)
(SEE PAGE 4-61)
FP-220(FLEXIBLE)
FP-249(FP-355, 356)(FLEXIBLE)
IC452
IC402
B-MECHA CHASSIS
(SEE PAGE 4-38)
IC451
IC452
IC801
DD-117 BOARD(1/2)
(SEE PAGE 4-109)
IC001
IC604
IC602
IC603
PD-107 BOARD(1/2)
(SEE PAGE 4-83, 86, 89, 90)
IC5801
CONTROL SWITCH BLOCK(MF-8500)
(SEE PAGE 4-69)
CONTROL SWITCH BLOCK(CF-60)(1/2)
(SEE PAGE 4-69)
CONTROL SWITCH BLOCK(CF-61)(1/2)
(SEE PAGE 4-72)
CONTROL SWITCH BLOCK(SS-8500)
(SEE PAGE 4-79)
VTR CONTROL SWITCH BLOCK(FK-8500)
(SEE PAGE 4-79)
IC802
IC801
DD-117 BOARD(1/2)
(SEE PAGE 4-109)
09

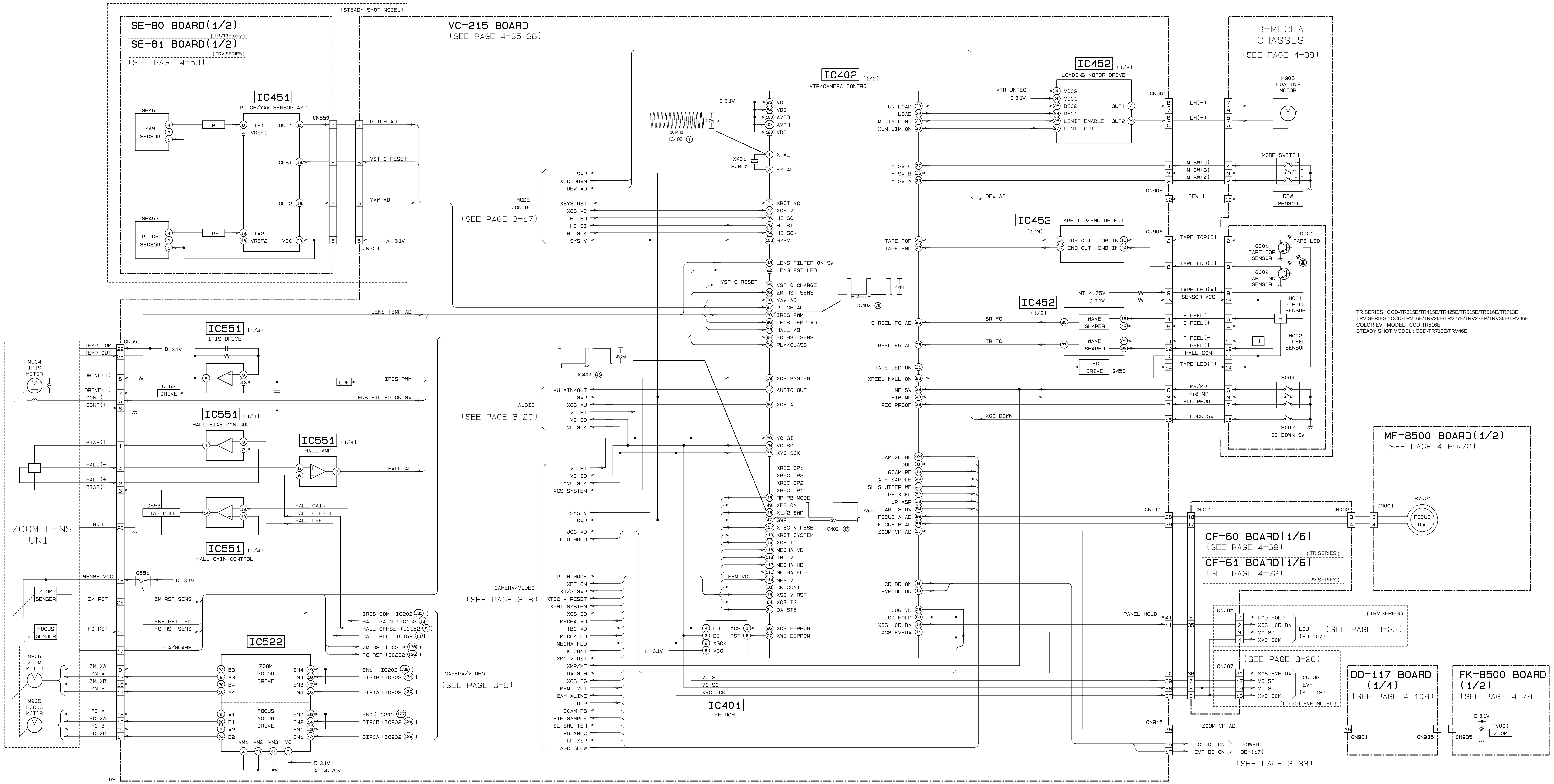
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMORT COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TRV46E/TR713E
LASER LINK MODEL : CCD-TR713E/TRV46E

3-2. CAMERA/VIDEO 1 BLOCK DIAGRAM


CD-210 BOARD (TR SERIES)
CD-211 BOARD (TRV SERIES)
(SEE PAGE 4-9)
IC401
CCD IMAGER
Q402 BUFFER
CN401
IC401 ①,②
7Vp-p
VC-215 BOARD
(SEE PAGE 4-17, 23, 27, 31)
IC501
TIMING GENERATOR
X501 28.6363MHz
IC502
S/H, AGC, A/D CONVERTER
A/D CONVERTER
CENTER BIAS
IC202
CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
CAMERA Y/C PROCESS, VTR Y/C PROCESS
FOCUS/ZOOM MOTOR CONTROL
VTR/CAMERA CONTROL (SEE PAGE 3-9)
YUV ENCODER D/A CONV
IC151
BURST LOCK
IC201
CHARACTER GENERATOR
MODE CONTROL (SEE PAGE 3-15)
IC001
REC/PB AMP
DCA MIX AMP
REC AMP
PB AMP
FLYING ERASE OSC
Q001-003, 012
CH SP1
CH SP2
FLYING ERASE
IC152
D/A CONVERTER (EVR)
AUDIO (SEE PAGE 3-19)
SERVO (SEE PAGE 3-12)
VTR/CAMERA CONTROL (SEE PAGE 3-9)
POWER (DD-117) (SEE PAGE 3-33)
CPC (FOR CHECK)
PJ-90 BOARD (1/3) (TR SERIES)
PJ-91 BOARD (1/3) (TRV SERIES)
(SEE PAGE 4-56)
J101 (1/3) VIDEO
CF-60 BOARD (1/6) (SEE PAGE 4-69)
CF-61 BOARD (1/6) (SEE PAGE 4-72) (TRV SERIES)
(B/W EVF MODEL) B/W EVF (VF-98) (SEE PAGE 3-29)
(TRV SERIES) LCD (PD-107) (SEE PAGE 3-23)
(COLOR EVF MODEL) COLOR EVF (VF-118) (SEE PAGE 3-26)
CAMERA REC
PB

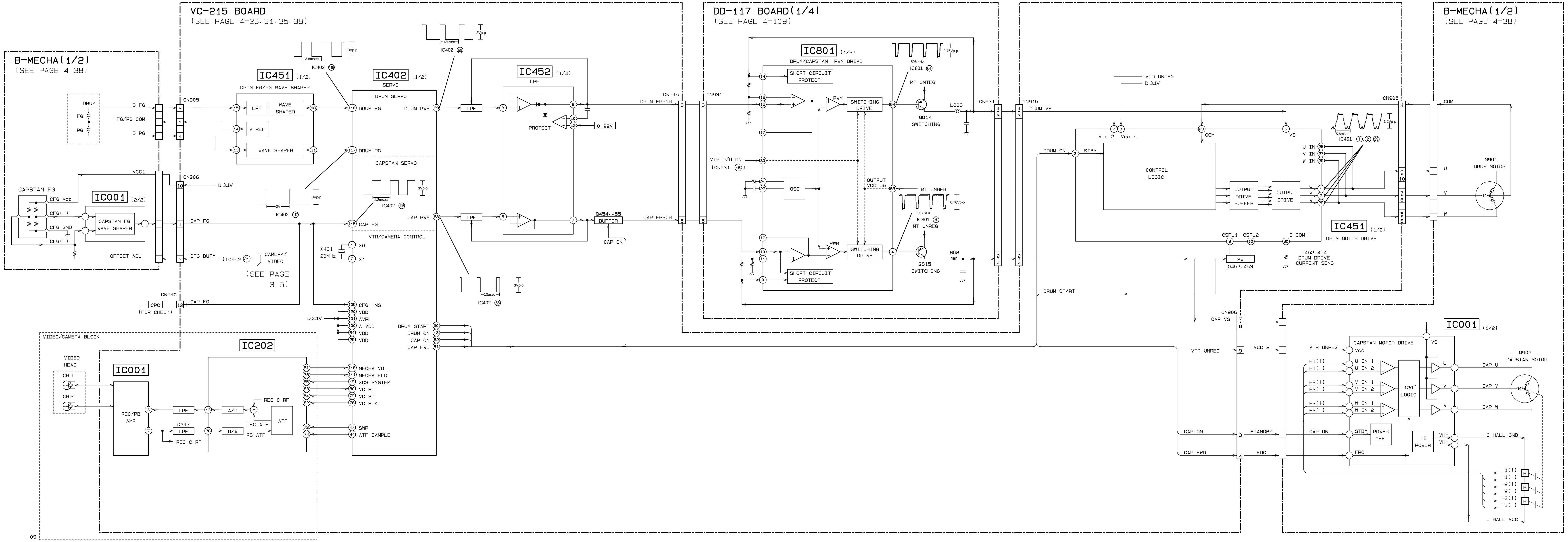
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E

3-3. VTR/CAMERA CONTROL BLOCK DIAGRAM

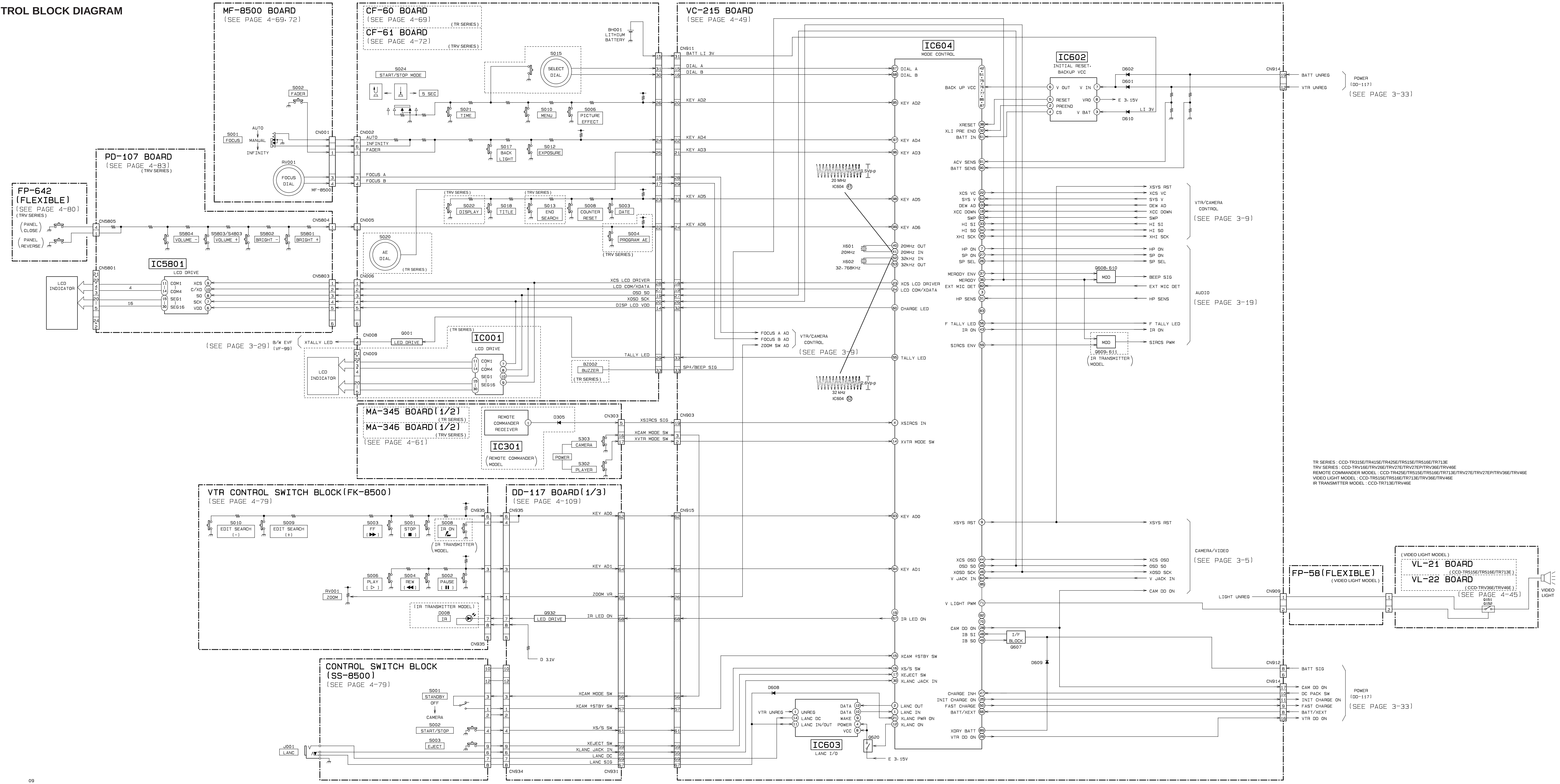

(STEADY SHOT MODEL)
SE-80 BOARD(1/2)
(TR713E only)
SE-81 BOARD(1/2)
(TRV SERIES)
(SEE PAGE 4-53)
SE451
YAW SECSOR
SE452
PITCH SECSOR
LPF
IC451
PITCH/YAW SENSOR AMP
LIA1
VREF1
LIA2
VREF2
OUT1
CRST
OUT2
VCC
CN650
CN904
PITCH AD
VST C RESET
YAW AD
A 3.1V
VC-215 BOARD
(SEE PAGE 4-35, 38)
IC402 (1/2)
VTR/CAMERA CONTROL
D 3.1V
VDD
AVDD
AVRH
XTAL
EXTAL
X401
20MHz
MODE CONTROL
(SEE PAGE 3-17)
SWP
XCC DOWN
DEW AD
XSYS RST
XCS VC
HI SO
HI SI
HI SCK
SYS V
LENS FILTER ON SW
LENS RST LED
VST C CHARGE
ZM RST SENS
PITCH AD
IRIS PWM
LENS TEMP AD
HALL AD
FC RST SENS
PLA/GLASS
XCS SYSTEM
AUDIO OUT
XCS AU
AUDIO
(SEE PAGE 3-20)
AU XIN/OUT
VC SI
VC SO
XVC SCK
CAMERA/VIDEO
(SEE PAGE 3-8)
XREC SP1
XREC LP2
XREC SP2
XREC LP1
RP PB MODE
XFE ON
X1/2 SWP
XTBC V RESET
XRST SYSTEM
XCS IO
MECHA VD
TBC VD
MECHA HD
MECHA FLD
MEM VD
CK CONT
XSG V RST
XCS TG
DA STB
XCS EEPROM
XWE EEPROM
IC401
EEPROM
UN LOAD
LOAD
LM LIM CONT
XLM LIM ON
M SW C
M SW B
M SW A
TAPE TOP
TAPE END
S REEL FG AD
T REEL FG AD
TAPE LED ON
XREEL HALL ON
ME SW
HI8 MP
REC PROOF
CAM XLINE
DOP
GCAM PB
ATF SAMPLE
SL SHUTTER WE
PB XREC
LP XSP
AGC SLOW
FOCUS A AD
FOCUS B AD
ZOOM VR AD
LCD DD ON
EVF DD ON
JOG VD
LCD HOLD
XCS LCD DA
XCS EVFDA
IC452 (1/3)
LOADING MOTOR DRIVE
VTR UNREG
IC452 (1/3)
TAPE TOP/END DETECT
IC452 (1/3)
WAVE SHAPER
LED DRIVE
Q456
MT 4.75V
SR FG
TR FG
CN901
CN906
CN908
CN911
CN915
B-MECHA CHASSIS
(SEE PAGE 4-38)
M903
LOADING MOTOR
LM(+)
LM(-)
MODE SWITCH
DEW SENSOR
D001
TAPE LED
Q001
TAPE TOP SENSOR
Q002
TAPE END SENSOR
H001
S REEL SENSOR
H002
T REEL SENSOR
S001
S002
CC DOWN SW
C LOCK SW
CN551
TEMP COM
TEMP OUT
M904
IRIS METER
DRIVE(+)
DRIVE(-)
CONT(-)
CONT(+)
IC551 (1/4)
IRIS DRIVE
Q552
DRIVE
IC551 (1/4)
HALL BIAS CONTROL
IC551 (1/4)
HALL AMP
BIAS(+)
HALL(-)
HALL(+)
BIAS(-)
Q553
BIAS BUFF
HALL GAIN
HALL OFFSET
HALL REF
IC551 (1/4)
HALL GAIN CONTROL
ZOOM LENS UNIT
GND
SENSE VCC
Q551
ZOOM SENSER
FOCUS SENSER
ZM RST
FC RST
ZM RST SENS
LENS RST LED
FC RST SENS
PLA/GLASS
M906
ZOOM MOTOR
M905
FOCUS MOTOR
ZM XA
ZM A
ZM XB
ZM B
FC A
FC XA
FC B
FC XB
IC522
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
AU 4.75V
IRIS COM (IC202 (133))
HALL GAIN (IC152 (10))
HALL OFFSET(IC152 (9))
HALL REF (IC152 (11))
ZM RST (IC202 (136))
FC RST (IC202 (135))
EN1 (IC202 (132))
DIR1B (IC202 (131))
DIR1A (IC202 (130))
EN0 (IC202 (127))
DIR0B (IC202 (128))
DIR0A (IC202 (129))
CAMERA/VIDEO
(SEE PAGE 3-6)
MF-8500 BOARD(1/2)
(SEE PAGE 4-69,72)
RV001
FOCUS DIAL
CF-60 BOARD(1/6)
(SEE PAGE 4-69)
(TR SERIES)
CF-61 BOARD(1/6)
(SEE PAGE 4-72)
(TRV SERIES)
PANEL HOLD
CN005
(TRV SERIES)
LCD
(PD-107)
(SEE PAGE 3-23)
(SEE PAGE 3-26)
CN007
COLOR EVF
(VF-119)
(COLOR EVF MODEL)
DD-117 BOARD (1/4)
(SEE PAGE 4-109)
FK-8500 BOARD (1/2)
(SEE PAGE 4-79)
ZOOM VR AD
CN931
CN935
RV001
ZOOM
POWER
(DD-117)
(SEE PAGE 3-33)

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
STEADY SHOT MODEL : CCD-TR713E/TRV46E

3-4. SERVO BLOCK DIAGRAM

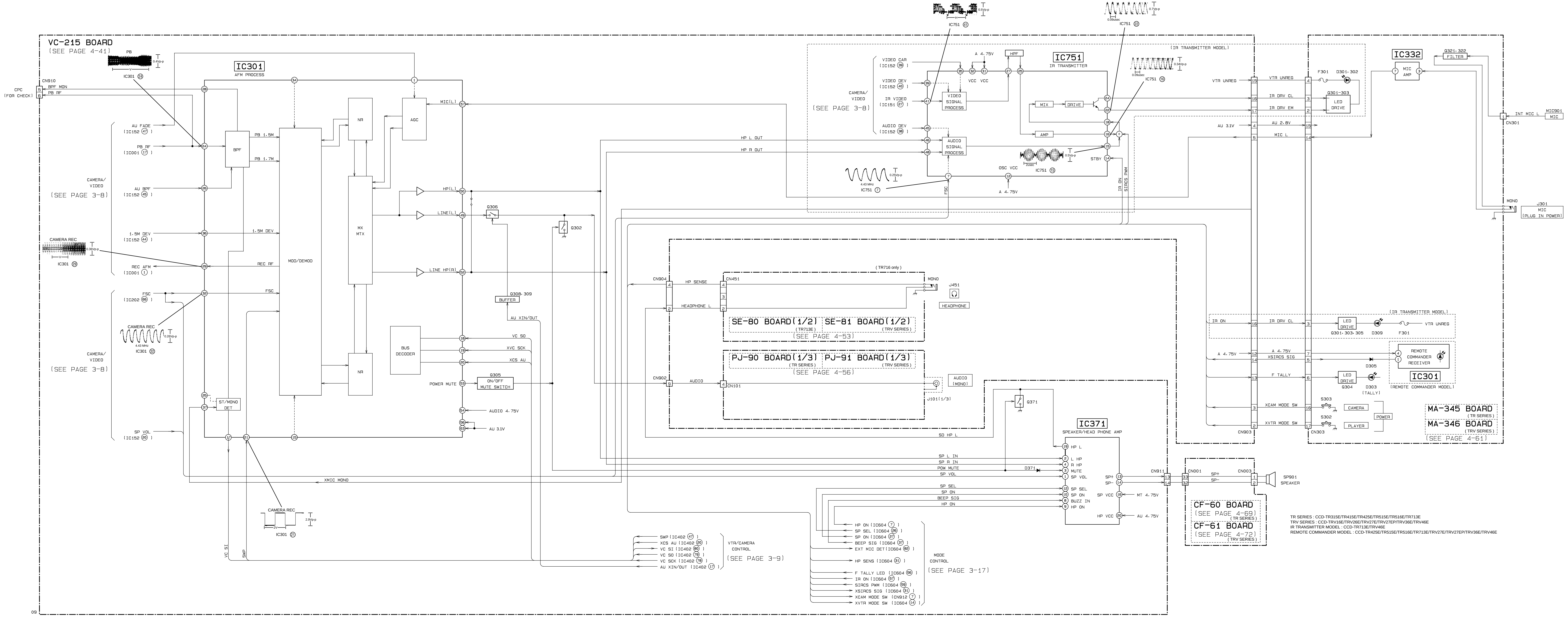

B-MECHA(1/2)
(SEE PAGE 4-38)
DRUM
FG
PG
D FG
FG/PG COM
D PG
VCC1
CAPSTAN FG
CFG Vcc
CFG(+)
CFG GND
CFG(-)
IC001 (2/2)
CAPSTAN FG WAVE SHAPER
OFFSET ADJ
VC-215 BOARD
(SEE PAGE 4-23, 31, 35, 38)
CN905
CN906
D 3.1V
CAP FG
CFG DUTY
(IC152 ㉑)
CAMERA/VIDEO
(SEE PAGE 3-5)
CN910
CPC
(FOR CHECK)
IC451 (1/2)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
V REF
WAVE SHAPER
2.8msec
3Vp-p
IC402 (116)
2V
3Vp-p
IC402 (117)
IC402 (1/2)
SERVO
DRUM SERVO
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
1.2msec
3Vp-p
IC402 (115)
CAP FG
CAP PWM
VTR/CAMERA CONTROL
X401
20MHz
X0
X1
CFG HMS
VDD
AVRH
A VDD
VDD
VDD
DRUM START
DRUM ON
CAP ON
CAP FWD
MECHA VD
MECHA FLD
XCS SYSTEM
VC SI
VC SO
VC SCK
SWP
ATF SAMPLE
13usec
3Vp-p
IC402 ㊾
13usec
3Vp-p
IC402 ㊳
IC452 (1/4)
LPF
LPF
PROTECT
0.29V
LPF
Q454, 455
BUFFER
CAP ON
CN915
DRUM ERROR
CAP ERROR
VIDEO/CAMERA BLOCK
VIDEO HEAD
CH 1
CH 2
IC001
REC/PB AMP
IC202
LPF
Q217
LPF
A/D
D/A
REC C RF
REC ATF
PB ATF
ATF
REC C RF
09
DD-117 BOARD(1/4)
(SEE PAGE 4-109)
CN931
IC801 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
506 kHz
0.76Vp-p
IC801 ㊹
MT UNTEG
Q814
SWITCHING
L806
VTR D/D ON
(CN931 ⑯)
OSC
OUTPUT VCC 56
MT UNREG
507 kHz
0.76Vp-p
IC801 ④
MT UNREG
PWM
SWITCHING DRIVE
SHORT CIRCUIT PROTECT
Q815
SWITCHING
L808
CN931
CN915
DRUM VS
VTR UNREG
D 3.1V
Vcc 2
Vcc 1
COM
VS
DRUM ON
STBY
CONTROL LOGIC
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U IN
V IN
W IN
U
V
W
5.6msec
1.2Vp-p
IC451 ①, ②, ㉙
IC451 (1/2)
DRUM MOTOR DRIVE
CSPL1
CSPL2
I COM
SW
Q452, 453
R452-454
DRUM DRIVE
CURRENT SENS
DRUM START
CN905
B-MECHA(1/2)
(SEE PAGE 4-38)
COM
U
V
W
M901
DRUM MOTOR
CN906
CAP VS
VTR UNREG
VCC 2
CAP ON
STANDBY
CAP FWD
FRC
IC001 (1/2)
CAPSTAN MOTOR DRIVE
VTR UNREG
Vcc
VS
H1(+)
H1(-)
H2(+)
H2(-)
H3(+)
H3(-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
U
V
W
CAP ON
STBY
POWER OFF
FRC
HE POWER
VH+
VH-
M902
CAPSTAN MOTOR
CAP U
CAP V
CAP W
C HALL GND
H1(+)
H1(-)
H2(+)
H2(-)
H3(+)
H3(-)
C HALL VCC

3-5. MODE CONTROL BLOCK DIAGRAM


MF-8500 BOARD
(SEE PAGE 4-69, 72)
S002 FADER
S001 FOCUS
AUTO
MANUAL
INFINITY
RV001 FOCUS DIAL
CN001
MF-8500
CF-60 BOARD
(SEE PAGE 4-69)
(TR SERIES)
CF-61 BOARD
(SEE PAGE 4-72)
(TRV SERIES)
S024 START/STOP MODE
5 SEC
S021 TIME
S010 MENU
S006 PICTURE EFFECT
S015 SELECT DIAL
S017 BACK LIGHT
S012 EXPOSURE
BH001 LITHIUM BATTERY
CN002
AUTO
INFINITY
FADER
FOCUS A
FOCUS B
S022 DISPLAY
S018 TITLE
S013 END SEARCH
S008 COUNTER RESET
S003 DATE
S004 PROGRAM AE
S020 AE DIAL
CN005
CN006
XCS LCD DRIVER
LCD COM/XDATA
OSD SO
XOSD SCK
DISP LCD VDD
CN008
Q001 LED DRIVE
IC001 LCD DRIVE
COM1
COM4
SEG1
SEG16
CN009
LCD INDICATOR
TALLY LED
BZ002 BUZZER
SP+/BEEP SIG
PD-107 BOARD
(SEE PAGE 4-83)
(TRV SERIES)
CN5805
CN5804
S5804 VOLUME −
S5803/S4803 VOLUME +
S5802 BRIGHT −
S5801 BRIGHT +
CN5801
IC5801 LCD DRIVE
XCS
C/XD
SO
SCK
VDD
CN5803
FP-642 (FLEXIBLE)
(SEE PAGE 4-80)
(TRV SERIES)
PANEL CLOSE
PANEL REVERSE
(SEE PAGE 3-29) B/W EVF (VF-99)
XTALLY LED
VC-215 BOARD
(SEE PAGE 4-49)
CN911
BATT LI 3V
DIAL A
DIAL B
KEY AD2
KEY AD4
KEY AD3
KEY AD5
KEY AD6
IC604 MODE CONTROL
BACK UP VCC
XRESET
XLI PRE END
BATT IN
ACV SENS
BATT SENS
20 MHz IC604 41 1.5Vp-p
X601 20MHz
X602 32.768KHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
XCS LCD DRIVER
LCD COM/XDATA
CHARGE LED
TALLY LED
32 kHz IC604 52 2.6Vp-p
FOCUS A AD
FOCUS B AD
ZOOM SW AD
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
IC602 INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
VRO
PREEND
CS
V BAT
D602
D601
D610
E 3.15V
LI 3V
CN914
BATT UNREG
VTR UNREG
POWER (DD-117)
(SEE PAGE 3-33)
XCS VC
SYS V
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
XSYS RST
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
HP ON
SP ON
SP SEL
MERODY ENV
MERODY
EXT MIC DET
HP SENS
Q608, 610 MOD
BEEP SIG
AUDIO
(SEE PAGE 3-19)
F TALLY LED
IR ON
SIRCS ENV
Q609, 611 MOD
SIRCS PWM
IR TRANSMITTER MODEL
CN903
XSIRCS SIG
XCAM MODE SW
XVTR MODE SW
XSIRCS IN
XVTR MODE SW
MA-345 BOARD (1/2)
(TR SERIES)
MA-346 BOARD (1/2)
(TRV SERIES)
(SEE PAGE 4-61)
REMOTE COMMANDER RECEIVER
D305
IC301
REMOTE COMMANDER MODEL
CN303
S303 CAMERA
POWER
S302 PLAYER
VTR CONTROL SWITCH BLOCK (FK-8500)
(SEE PAGE 4-79)
S010 EDIT SEARCH (−)
S009 EDIT SEARCH (+)
S003 FF
S001 STOP
S008 IR ON
IR TRANSMITTER MODEL
S006 PLAY
S004 REW
S002 PAUSE
RV001 ZOOM
D008 IR
CN935
DD-117 BOARD (1/3)
(SEE PAGE 4-109)
KEY AD0
KEY AD1
ZOOM VR
Q932 LED DRIVE
IR LED ON
D 3.1V
CN915
CONTROL SWITCH BLOCK (SS-8500)
(SEE PAGE 4-79)
S001 STANDBY
OFF
CAMERA
S002 START/STOP
S003 EJECT
J001 LANC
XCAM MODE SW
XCAM +STBY SW
XS/S SW
XEJECT SW
XLANC JACK IN
LANC DC
LANC SIG
CN934
CN931
XSYS RST
CAMERA/VIDEO
(SEE PAGE 3-5)
XCS OSD
OSD SO
XOSD SCK
V JACK IN
CAM DD ON
V LIGHT PWM
IR LED ON
IB SI
IB SO
I/F BLOCK Q607
D609
XCAM +STBY SW
XS/S SW
XEJECT SW
XLANC JACK IN
D608
VTR UNREG
IC603 LANC I/O
UNREG
LANC DC
LANC IN/OUT
DATA
WAKE
POWER
VCC
Q620
E 3.15V
LANC OUT
LANC IN
XLANC PWR ON
XLANC ON
CHARGE INH
INIT CHARGE ON
FAST CHARGE
BATT/XEXT
XDRY BATT
VTR DD ON
CN912
BATT SIG
CN914
CAM DD ON
DC PACK SW
INIT CHARGE ON
FAST CHARGE
BATT/XEXT
VTR DD ON
POWER (DD-117)
(SEE PAGE 3-33)
CN909
LIGHT UNREG
FP-58 (FLEXIBLE)
(VIDEO LIGHT MODEL)
(VIDEO LIGHT MODEL)
VL-21 BOARD
(CCD-TR515E/TR516E/TR713E)
VL-22 BOARD
(CCD-TRV36E/TRV46E)
(SEE PAGE 4-45)
Q151 Q152
VIDEO LIGHT

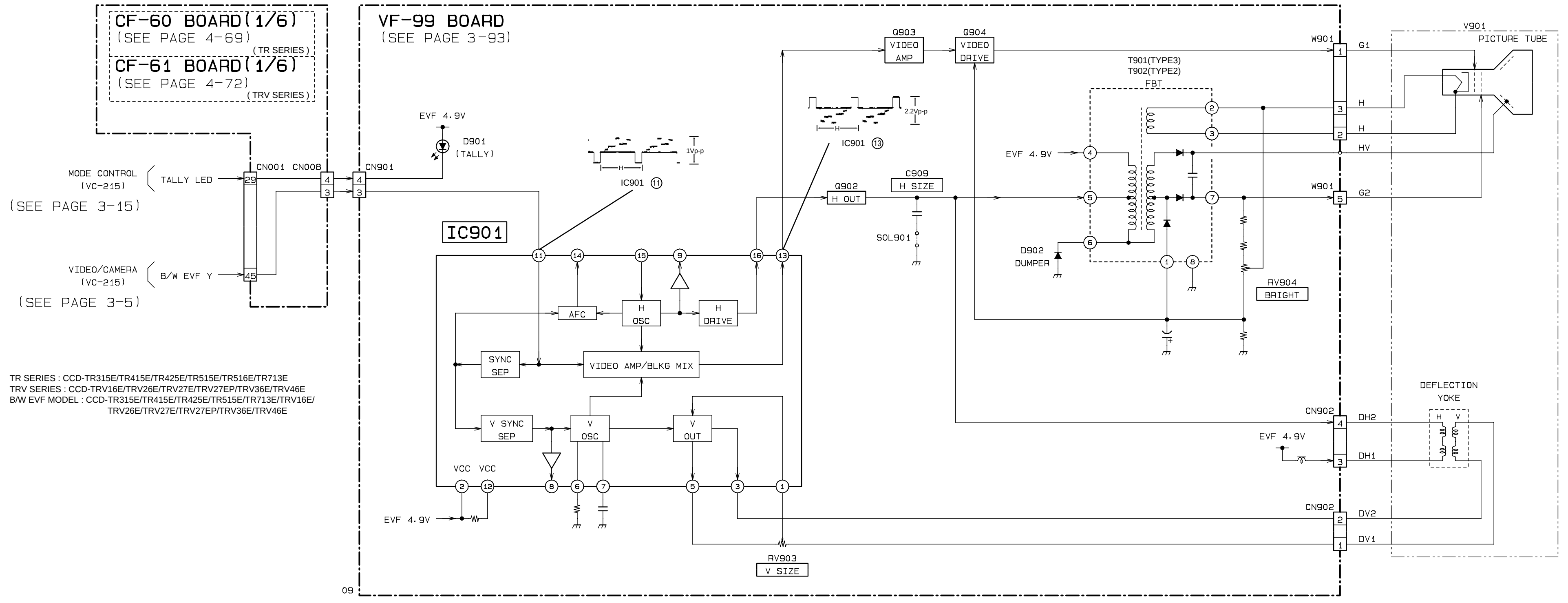
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E

3-6. AUDIO BLOCK DIAGRAM


VC-215 BOARD
(SEE PAGE 4-41)
IC301
AFM PROCESS
CPC (FOR CHECK)
CN910
BPF MON
PB RF
AU FADE (IC152 47)
PB RF (IC001 17)
CAMERA/VIDEO
(SEE PAGE 3-8)
AU BPF (IC152 46)
1.5M DEV (IC152 44)
CAMERA REC
REC AFM (IC001 1)
FSC (IC202 66)
SP VOL (IC152 60)
BPF
PB 1.5M
PB 1.7M
1.5M DEV
REC RF
FSC
MOD/DEMOD
NR
AGC
MIC(L)
HP(L)
LINE(L)
LINE HP(R)
MX MTX
Q305
Q302
Q308,309
BUFFER
AU XIN/OUT
BUS DECODER
VC SO
XVC SCK
XCS AU
POWER MUTE
Q305
ON/OFF MUTE SWITCH
AUDIO 4.75V
AU 3.1V
ST/MONO DET
XMIC MONO
SWP (IC402 67)
XCS AU (IC402 95)
VC SI (IC402 79)
VC SO (IC402 78)
VC SCK (IC402 76)
AU XIN/OUT (IC402 17)
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
IC751
IR TRANSMITTER
VIDEO CAR (IC152 56)
VIDEO DEV (IC152 45)
IR VIDEO (IC151 27)
AUDIO DEV (IC152 48)
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
MIX
DRIVE
AMP
HPF
STBY
OSC VCC
A 4.75V
HP L OUT
HP R OUT
(IR TRANSMITTER MODEL)
SE-80 BOARD(1/2) SE-81 BOARD(1/2)
(TR713E) (TRV SERIES)
(SEE PAGE 4-53)
CN904
HP SENSE
HEADPHONE L
CN451
J451
HEADPHONE
PJ-90 BOARD(1/3) PJ-91 BOARD(1/3)
(TR SERIES) (TRV SERIES)
(SEE PAGE 4-56)
CN903
AUDIO
CN101
AUDIO (MONO)
J101(1/3)
Q371
IC371
SPEAKER/HEAD PHONE AMP
SD HP L
SP L IN
SP R IN
PCM MUTE
SP VOL
SP SEL
SP ON
BEEP SIG
HP ON
SP+
SP-
SP VCC
HP VCC
MT 4.75V
AU 4.75V
CN911
CN001
CN003
SP901
SPEAKER
CF-60 BOARD
(SEE PAGE 4-69)
(TR SERIES)
CF-61 BOARD
(SEE PAGE 4-72)
(TRV SERIES)
HP ON (IC604 2)
SP SEL (IC604 26)
SP ON (IC604 27)
BEEP SIG (IC604 80)
EXT MIC DET (IC604 60)
HP SENS (IC604 91)
F TALLY LED (IC604 96)
IR ON (IC604 57)
SIRCS PWM (IC604 55)
XSIRCS SIG (IC604 56)
XCAM MODE SW (IC612 7)
XVTR MODE SW (IC604 11)
MODE CONTROL
(SEE PAGE 3-17)
IC332
MIC AMP
Q301-302
FILTER
VTR UNREG
F301
D301-302
Q301-303
LED DRIVE
IR DRV CL
IR DRV EM
AU 2.8V
MIC L
INT MIC L
MIC901 MIC
CN301
MONO
J301 MIC (PLUG IN POWER)
(IR TRANSMITTER MODEL)
IR ON
LED DRIVE
Q301-303-305
D309
REMOTE COMMANDER RECEIVER
IC301
(REMOTE COMMANDER MODEL)
A 4.75V
XSIRCS SIG
F TALLY
Q304
D303 (TALLY)
S303
CAMERA
S302
PLAYER
POWER
XCAM MODE SW
XVTR MODE SW
CN903
CN303
MA-345 BOARD
(TR SERIES)
MA-346 BOARD
(TRV SERIES)
(SEE PAGE 4-61)

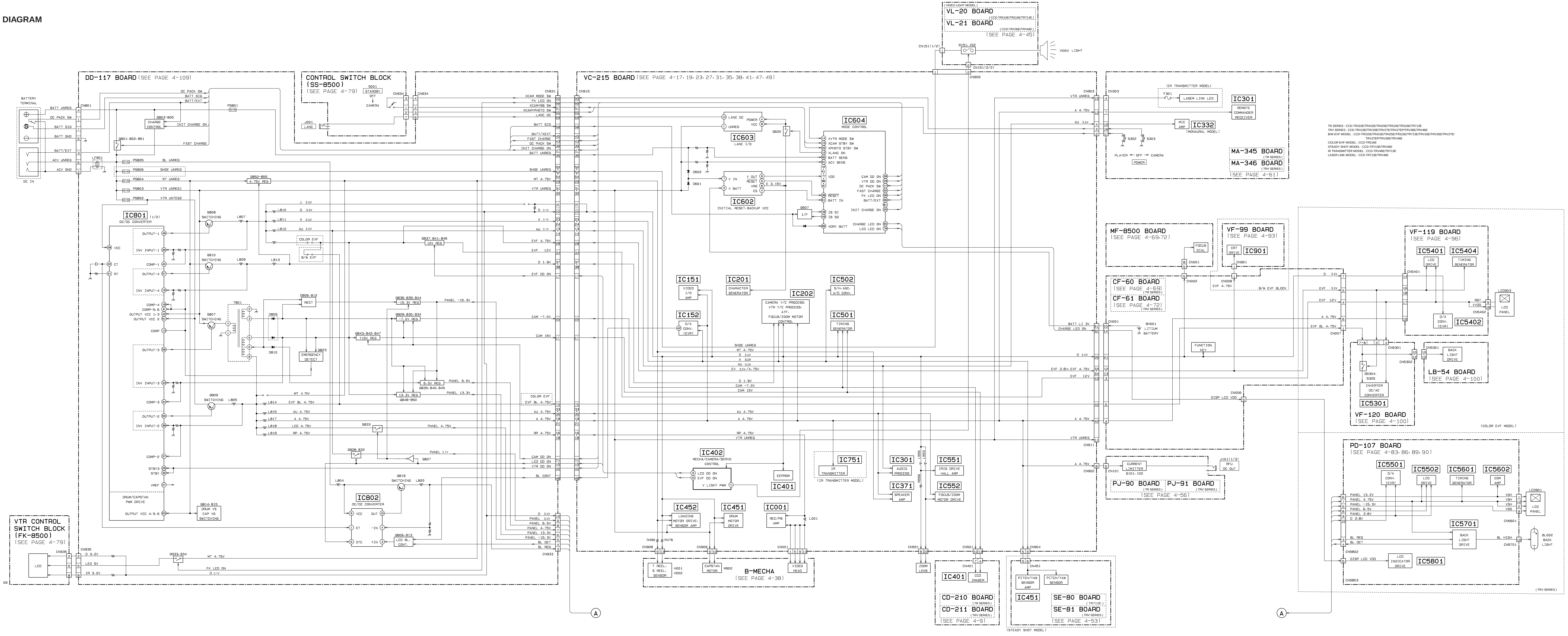
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E

3-9. B/W EVF BLOCK DIAGRAM
B/W EVF MODEL


CF-60 BOARD (1/6)
(SEE PAGE 4-69)
(TR SERIES)
CF-61 BOARD (1/6)
(SEE PAGE 4-72)
(TRV SERIES)
MODE CONTROL
(VC-215)
TALLY LED
(SEE PAGE 3-15)
VIDEO/CAMERA
(VC-215)
B/W EVF Y
(SEE PAGE 3-5)
CN001
CN008
CN901
VF-99 BOARD
(SEE PAGE 3-93)
EVF 4.9V
D901
(TALLY)
IC901 ⑪
1Vp-p
H
IC901 ⑬
2.2Vp-p
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
EVF 4.9V
RV903
V SIZE
09
Q903
VIDEO AMP
Q904
VIDEO DRIVE
Q902
H OUT
C909
H SIZE
SOL901
D902
DUMPER
T901(TYPE3)
T902(TYPE2)
FBT
EVF 4.9V
RV904
BRIGHT
W901
G1
H
H
HV
W901
G2
V901
PICTURE TUBE
DEFLECTION YOKE
H
V
CN902
DH2
DH1
EVF 4.9V
CN902
DV2
DV1

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/
TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

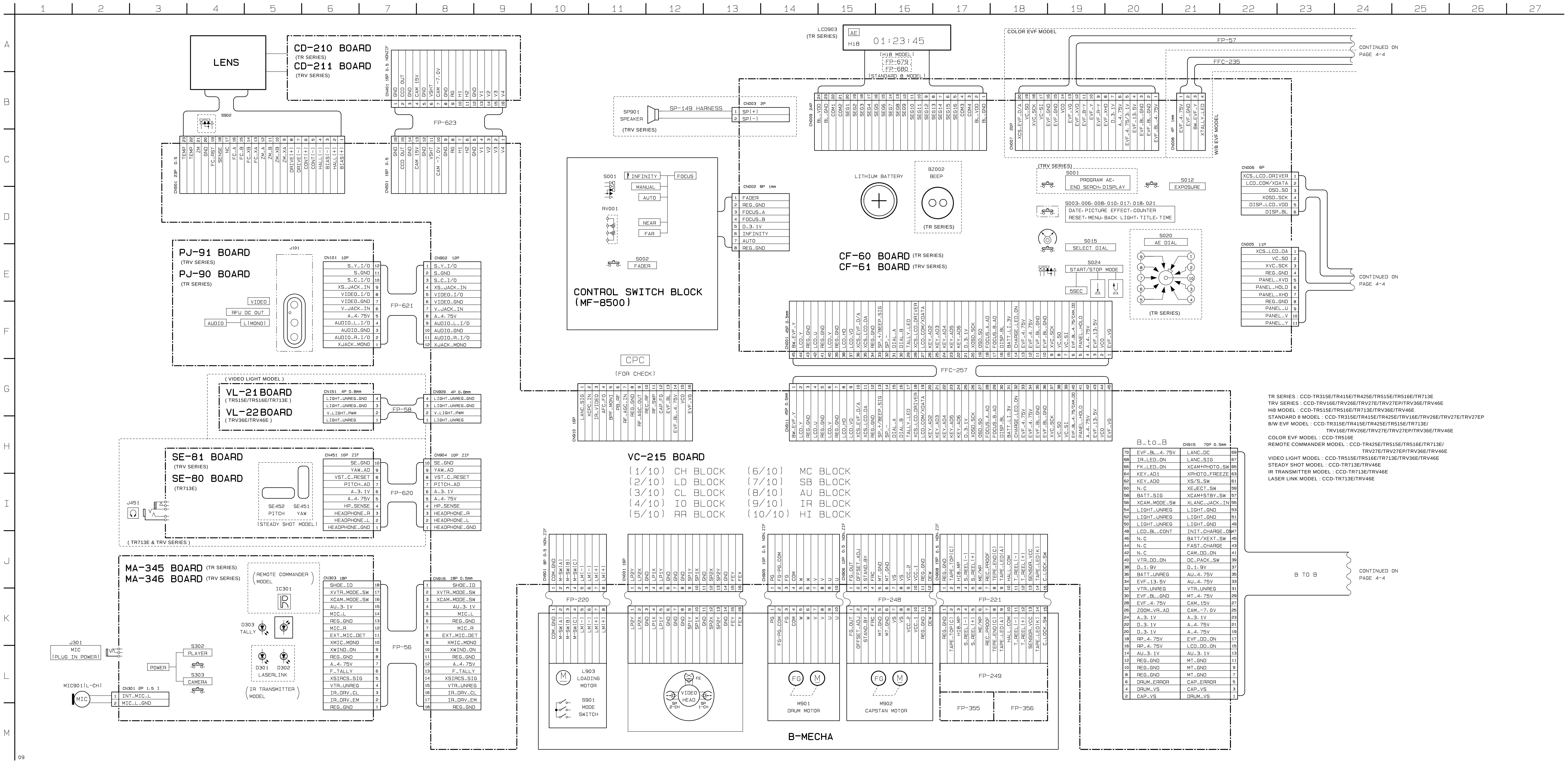
3-10. POWER BLOCK DIAGRAM


DD-117 BOARD (SEE PAGE 4-109)
BATTERY TERMINAL
DC IN
IC801 (1/2) DC/DC CONVERTER
IC802 DC/DC CONVERTER
CONTROL SWITCH BLOCK (SS-8500) (SEE PAGE 4-79)
S001 STANDBY OFF CAMERA
J001 LANC
VTR CONTROL SWITCH BLOCK (FK-8500) (SEE PAGE 4-79)
VC-215 BOARD (SEE PAGE 4-17, 19, 23, 27, 31, 35, 38, 41, 47, 49)
IC603 LANC I/O
IC604 MODE CONTROL
IC602 INITIAL RESET-BACKUP VCC
IC151 VIDEO I/O AMP
IC152 D/A CONV. (EVR)
IC201 CHARACTER GENERATOR
IC202 CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
IC502 S/H, AGC, A/D CONV.
IC501 TIMING GENERATOR
IC402 MECHA/CAMERA/SERVO CONTROL
IC401 EEPROM
IC751 IR TRANSMITTER (IR TRANSMITTER MODEL)
IC301 AUDIO PROCESS
IC371 SPEAKER AMP
IC551 IRIS DRIVE HALL AMP
IC552 FOCUS/ZOOM MOTOR DRIVE
IC452 LOADING MOTOR DRIVE, SENSOR AMP
IC451 DRUM MOTOR DRIVE
IC001 REC/PB AMP
B-MECHA (SEE PAGE 4-38)
VL-20 BOARD
VL-21 BOARD (SEE PAGE 4-45)
VIDEO LIGHT
MA-345 BOARD
MA-346 BOARD (SEE PAGE 4-61)
IC301 REMOTE COMMANDER RECEIVER
IC332 (MONAURAL MODEL)
LASER LINK LED
MF-8500 BOARD (SEE PAGE 4-69, 72)
VF-99 BOARD (SEE PAGE 4-93)
IC901
CF-60 BOARD (SEE PAGE 4-69)
CF-61 BOARD (SEE PAGE 4-72)
LITHIUM BATTERY
FUNCTION KEY
VF-119 BOARD (SEE PAGE 4-96)
IC5401 LCD DRIVE
IC5404 TIMING GENERATOR
IC5402 D/A CONV. (EVR)
LCD PANEL
LB-54 BOARD (SEE PAGE 4-100)
VF-120 BOARD (SEE PAGE 4-100)
IC5301 INVERTER DC/AC CONVERTER
(COLOR EVF MODEL)
PJ-90 BOARD
PJ-91 BOARD (SEE PAGE 4-56)
PD-107 BOARD (SEE PAGE 4-83, 86, 89, 90)
IC5501 D/A CONV. (EVR)
IC5502 LCD DRIVE
IC5601 TIMING GENERATOR
IC5602 COM AMP
IC5701 BACK LIGHT DRIVE
IC5801 LCD INDICATOR DRIVE
(TRV SERIES)
CD-210 BOARD
CD-211 BOARD (SEE PAGE 4-9)
IC401 CCD IMAGER
SE-80 BOARD
SE-81 BOARD (SEE PAGE 4-53)
IC451 PITCH/YAW SENSOR AMP
(STEADY SHOT MODEL)
A

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TRV46E/TR713E
LASER LINK MODEL : CCD-TR713E/TRV46E

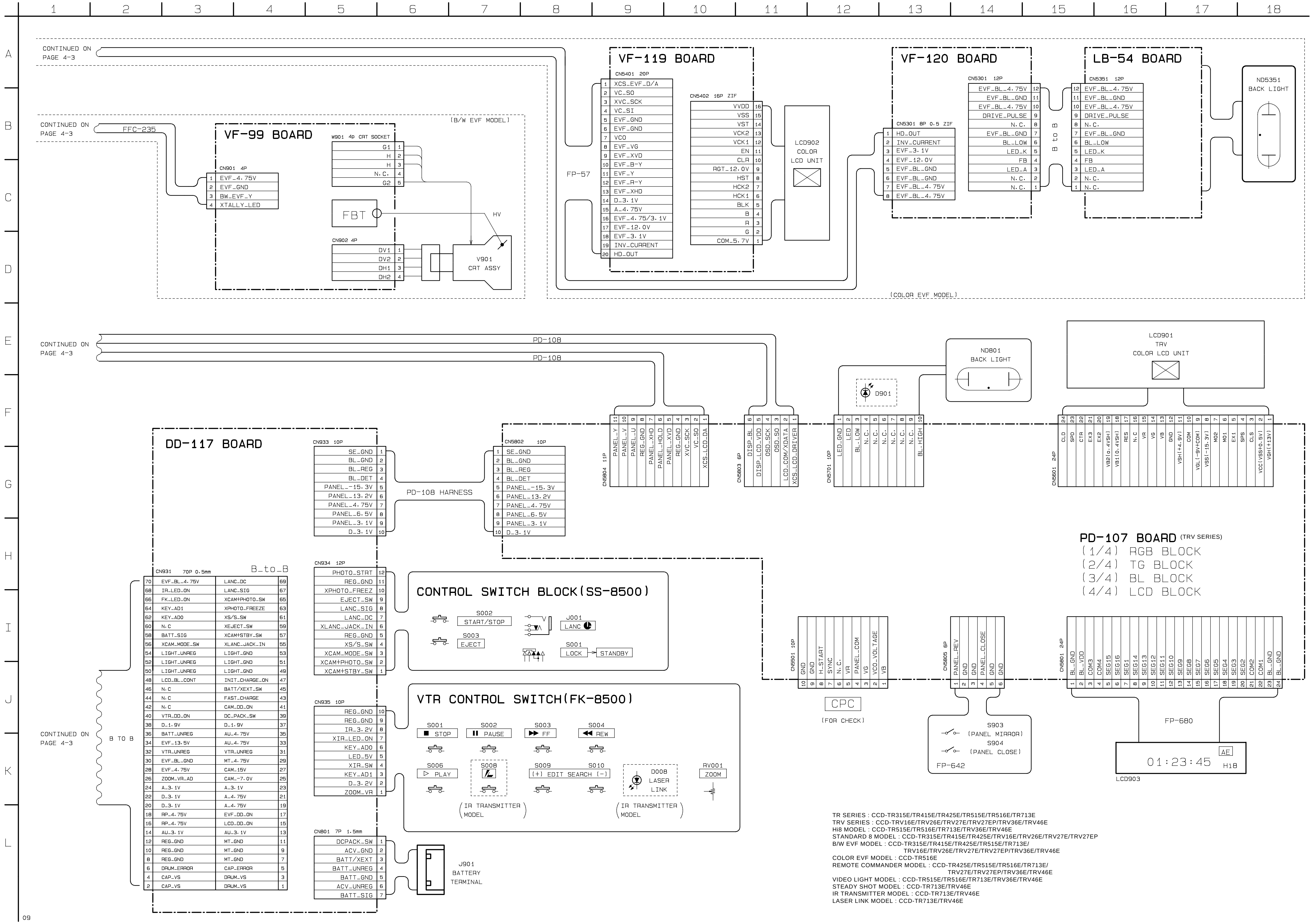
SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1)


LENS
CD-210 BOARD (TR SERIES)
CD-211 BOARD (TRV SERIES)
FP-623
S902
CN401 16P 0.5 NON-ZIF
CN501 23P 0.5
CN601 16P 0.5
PJ-91 BOARD (TRV SERIES)
PJ-90 BOARD (TR SERIES)
J101
VIDEO
RFU DC OUT
AUDIO
L(MONO)
CN101 12P
CN902 12P
FP-621
(VIDEO LIGHT MODEL)
VL-21 BOARD (TR515E/TR516E/TR713E)
VL-22 BOARD (TRV36E/TRV46E)
CN151 4P 0.8mm
CN909 4P 0.8mm
FP-58
SE-81 BOARD (TRV SERIES)
SE-80 BOARD (TR713E)
J451
SE452 PITCH
SE451 YAW
(STEADY SHOT MODEL)
CN451 10P ZIF
CN904 10P ZIF
FP-620
(TR713E & TRV SERIES)
MA-345 BOARD (TR SERIES)
MA-346 BOARD (TRV SERIES)
(REMOTE COMMANDER MODEL)
IC301
D303 TALLY
D301 D302 LASERLINK
(IR TRANSMITTER MODEL)
CN303 18P
CN916 18P 0.5mm
FP-56
J301 MIC (PLUG IN POWER)
S302 PLAYER
S303 CAMERA
POWER
MIC901(L-CH)
CN301 2P 1.5 I
SP901 SPEAKER (TRV SERIES)
SP-149 HARNESS
CN003 2P
CONTROL SWITCH BLOCK (MF-8500)
S001 INFINITY FOCUS MANUAL AUTO
RV001 NEAR FAR
S002 FADER
CN002 8P 1mm
CPC (FOR CHECK)
CN910 16P
LCD903 (TR SERIES)
AE H18 01:23:45
(Hi8 MODEL) FP-679 FP-680 (STANDARD 8 MODEL)
CN009 24P
LITHIUM BATTERY
BZ002 BEEP (TR SERIES)
CF-60 BOARD (TR SERIES)
CF-61 BOARD (TRV SERIES)
COLOR EVF MODEL
FP-57
FFC-235
CN007 20P
CN008 4P 1mm
W/B EVF MODEL
(TRV SERIES) S001 PROGRAM AE, END SERCH, DISPLAY
S012 EXPOSURE
S003, 006, 008, 010, 017, 018, 021 DATE, PICTURE EFFECT, COUNTER RESET, MENU, BACK LIGHT, TITLE, TIME
S015 SELECT DIAL
S020 AE DIAL (TR SERIES)
S024 START/STOP MODE 5SEC
CN006 6P
CN005 11P
CONTINUED ON PAGE 4-4
CN001 45P 0.5mm
FFC-257
CN811 45P 0.5mm
VC-215 BOARD
(1/10) CH BLOCK (6/10) MC BLOCK
(2/10) LD BLOCK (7/10) SB BLOCK
(3/10) CL BLOCK (8/10) AU BLOCK
(4/10) IO BLOCK (9/10) IR BLOCK
(5/10) RR BLOCK (10/10) HI BLOCK
B_to_B
CN915 70P 0.5mm
B TO B
CONTINUED ON PAGE 4-4
FP-220
L903 LOADING MOTOR
S901 MODE SWITCH
VIDEO HEAD
FP-248
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
FP-221
FP-249
FP-355
FP-356
B-MECHA

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

FRAME SCHEMATIC DIAGRAM (2)


CONTINUED ON PAGE 4-3
VF-99 BOARD
(B/W EVF MODEL)
FFC-235
CN901 4P
EVF_4.75V
EVF_GND
BW_EVF_Y
XTALLY_LED
W901 4P CRT SOCKET
FBT
HV
CN902 4P
V901 CRT ASSY
VF-119 BOARD
CN5401 20P
CN5402 16P ZIF
FP-57
LCD902 COLOR LCD UNIT
VF-120 BOARD
CN5301 8P 0.5 ZIF
CN5301 12P
B to B
LB-54 BOARD
CN5351 12P
ND5351 BACK LIGHT
(COLOR EVF MODEL)
PD-108
ND801 BACK LIGHT
D901
LCD901 TRV COLOR LCD UNIT
DD-117 BOARD
CN933 10P
PD-108 HARNESS
CN5802 10P
CN5804 11P
CN5803 8P
CN5701 10P
CN5601 24P
PD-107 BOARD (TRV SERIES)
(1/4) RGB BLOCK
(2/4) TG BLOCK
(3/4) BL BLOCK
(4/4) LCD BLOCK
CN931 70P 0.5mm
B_to_B
B TO B
CN934 12P
CONTROL SWITCH BLOCK(SS-8500)
S002 START/STOP
S003 EJECT
J001 LANC
S001 LOCK STANDBY
CN5501 10P
CN5605 6P
CN5801 24P
CPC (FOR CHECK)
VTR CONTROL SWITCH(FK-8500)
CN935 10P
S001 STOP
S002 PAUSE
S003 FF
S004 REW
S006 PLAY
S008
S009 S010 (+) EDIT SEARCH (-)
D008 LASER LINK
RV001 ZOOM
(IR TRANSMITTER MODEL)
(IR TRANSMITTER MODEL)
S903 (PANEL MIRROR)
S904 (PANEL CLOSE)
FP-642
FP-680
01:23:45
AE
Hi8
LCD903
CN801 7P 1.5mm
J901 BATTERY TERMINAL
09

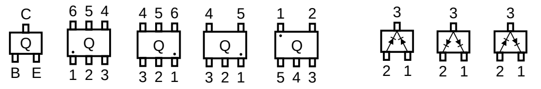
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enable seeing.
  (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- Through hole is omitted.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.

Transistor   Diode


C
Q
B E
6 5 4
Q
1 2 3
4 5 6
Q
3 2 1
4 5
Q
3 2 1
1 2
Q
5 4 3
3
2 1
3
2 1
3
2 1

- **For schematic diagrams.**
- All capacitors are in µF unless otherwise noted. pF: µµF.
  50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520
Kinds of capacitor	Temperature chracteristics	External dimensions (mm)

- Constants of resistors, capasitors, ICs and etc with XX indicate tha they are not used. In such cases, the unused circuits may be indicated.
- Parts with ☆ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- ⊡ : non flammable resistor.
- ⊡ : fusible resistor.
- ▭ : panel designation.
- ━ : B+ Line
- ╍ : B– Line
- ⇨ : IN/OUT direction of (+, –) B LINE.
- □ : adjustment for repair.
- Circled numbers refer to waveforms.

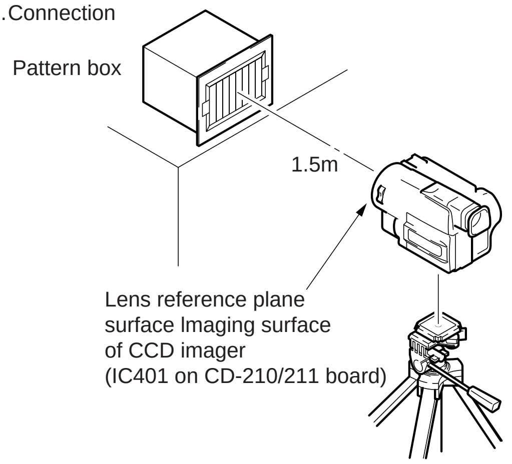
The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Refer to page 3 as for "Table for difference of functions" of models and classification.

- **Measuring conditions voltage value and waveform.**
- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

1.Connection


Pattern box
1.5m
Lens reference plane
surface Imaging surface
of CCD imager
(IC401 on CD-210/211 board)

2.Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

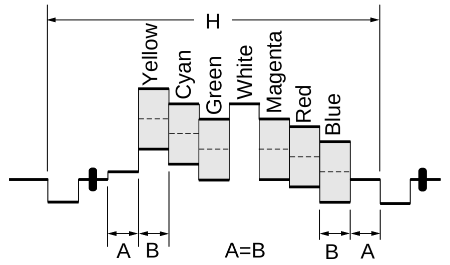

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

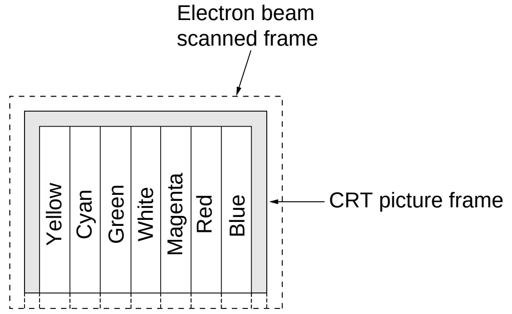
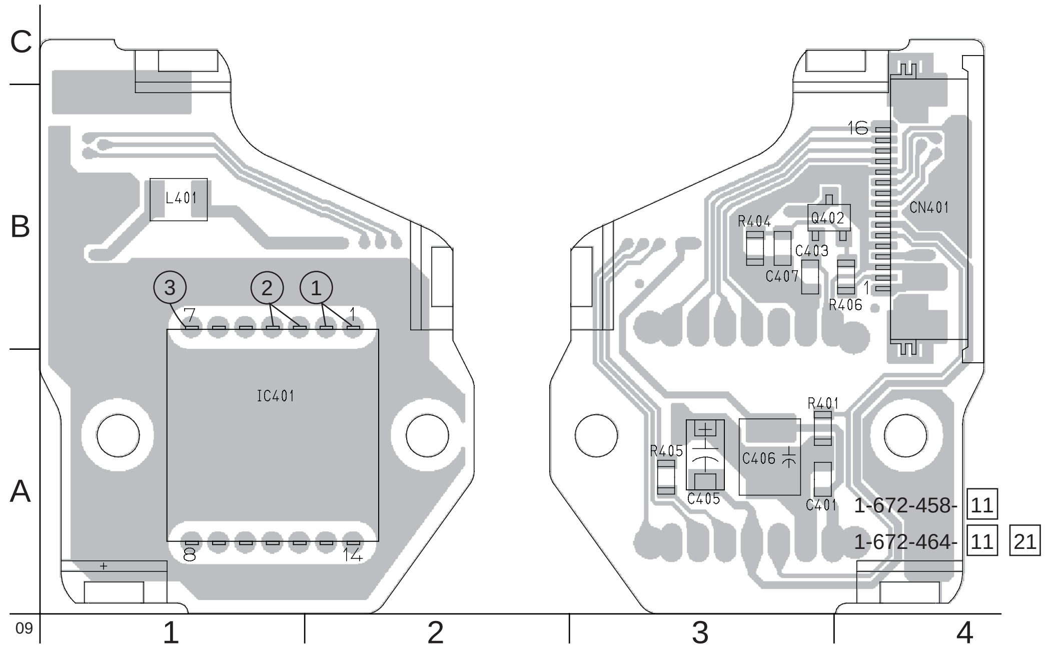

Electron beam
scanned frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame

Fig. b (Picture on monitor TV)

CD-210/211 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-210 BOARD: 4,000 series, CD-211 BOARD: 9,000 series –

CD-210/211 BOARD (SIDE B)   CD-210/211 BOARD (SIDE A)


C
B
A
L401
③
②
①
7
1
IC401
8
14
16
R404
Q402
CN401
C403
C407
1
R406
R401
R405
C406
C405
C401
1-672-458- 11
1-672-464- 11 21
09
1
2
3
4

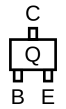
CD-210/
CD-211 BOARD

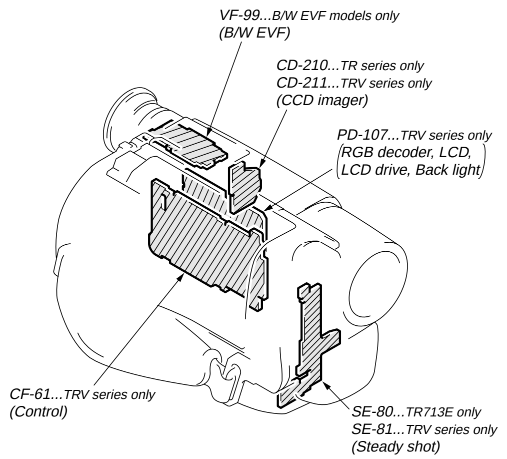
C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3
R406	B-4

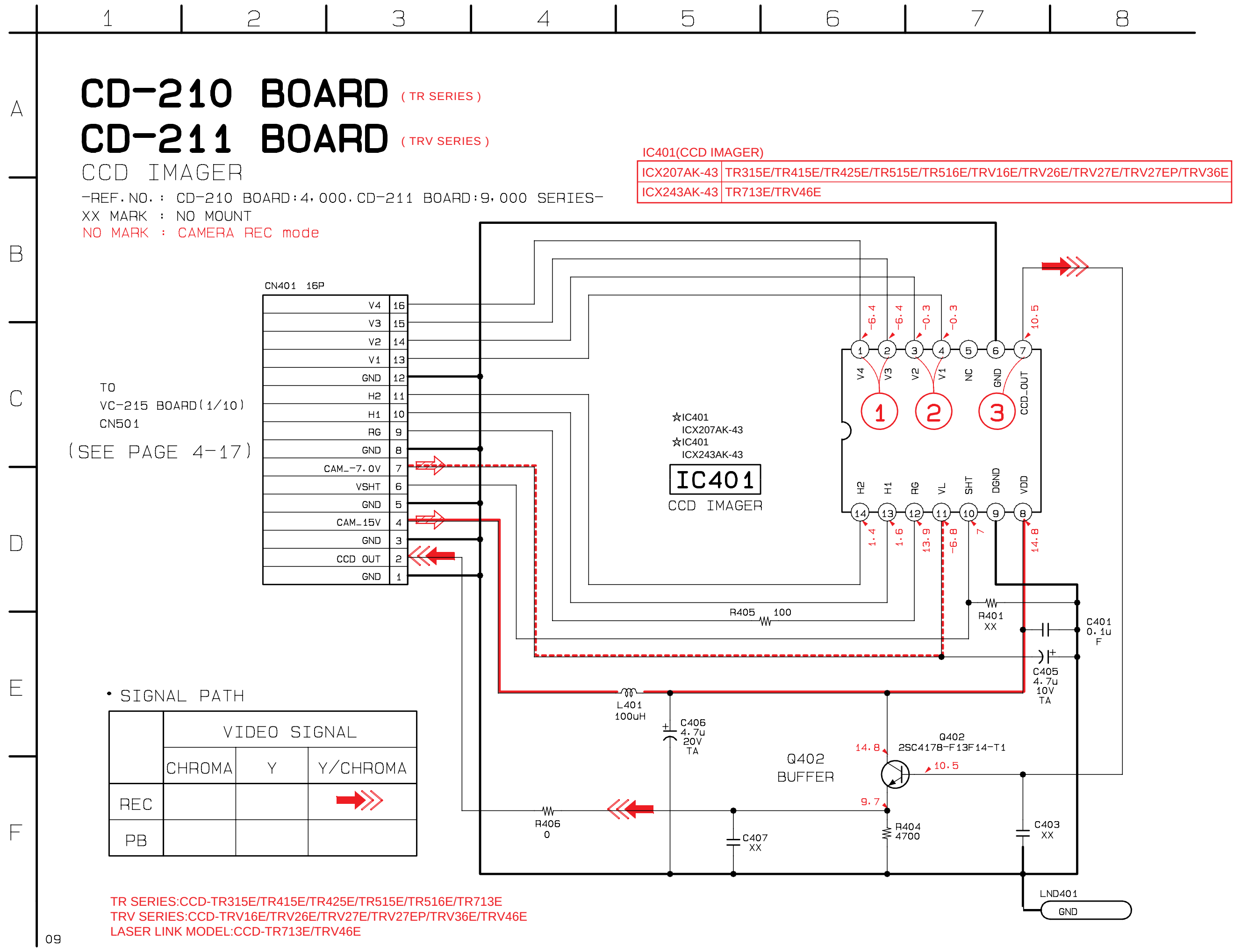
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

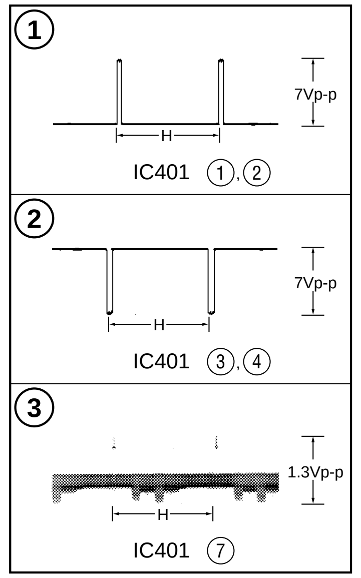
- Chip transistor




VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
(RGB decoder, LCD,
LCD drive, Back light)
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)


1
2
3
4
5
6
7
8
A
B
C
D
E
F
CD-210 BOARD (TR SERIES)
CD-211 BOARD (TRV SERIES)
CCD IMAGER
-REF.NO.: CD-210 BOARD:4,000.CD-211 BOARD:9,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
IC401(CCD IMAGER)
ICX207AK-43 TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E
ICX243AK-43 TR713E/TRV46E
CN401 16P
V4 16
V3 15
V2 14
V1 13
GND 12
H2 11
H1 10
RG 9
GND 8
CAM_-7.0V 7
VSHT 6
GND 5
CAM_15V 4
GND 3
CCD OUT 2
GND 1
TO
VC-215 BOARD(1/10)
CN501
(SEE PAGE 4-17)
-6.4
-6.4
-0.3
-0.3
10.5
V4
V3
V2
V1
NC
GND
CCD_OUT
①
②
③
☆IC401
ICX207AK-43
☆IC401
ICX243AK-43
IC401
CCD IMAGER
H2
H1
RG
VL
SHT
DGND
VDD
1.4
1.6
13.9
-6.8
7
14.8
R405 100
R401
XX
C401
0.1u
F
C405
4.7u
10V
TA
L401
100uH
C406
4.7u
20V
TA
Q402
2SC4178-F13F14-T1
Q402
BUFFER
14.8
10.5
9.7
R406
0
C407
XX
R404
4700
C403
XX
LND401
GND
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
LASER LINK MODEL:CCD-TR713E/TRV46E
09

CD-210/211 BOARD
CAMERA REC



Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-210/211 board supplied as the repair parts.
  When replacing the CD-210/211 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

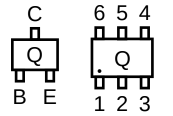
VC-215 BOARD
(SIDE B)

C002	A-5	C227	D-5	C484	A-2	CN904	A-9	Q012	B-5	R058	B-6	R260	D-3	R471	A-2	R645	E-2
C003	A-5	C229	E-5	C485	A-1	CN910	D-1	Q016	B-5	R066	B-6	R261	E-4	R472	A-2	R646	F-2
C008	A-4	C232	D-3	C504	E-6			Q017	B-6	R067	C-6	R262	D-4	R473	A-1	R647	F-2
C011	B-5	C233	D-5	C505	E-6	D001	C-4	Q018	C-5	R068	C-6	R263	E-6	R475	A-1	R648	F-2
C012	B-5	C234	D-5	C506	E-7	D201	D-3	Q019	C-6	R069	C-6	R264	E-4	R477	A-2	R649	F-2
C013	B-6	C235	D-3	C507	E-6	D202	D-3	Q021	B-6	R070	C-6	R265	E-4	R479	A-2	R651	F-2
C014	B-6	C236	D-3	C508	F-5	D371	E-8	Q023	C-6	R076	C-6	R266	E-4	R480	A-2	R652	F-3
C015	B-5	C239	E-4	C509	E-6	D502	F-5	Q025	C-6	R077	C-6	R267	D-4	R481	A-2	R653	F-3
C016	B-5	C241	E-3	C510	E-6	D604	F-2	Q026	C-6	R078	C-6	R304	B-9	R482	A-2	R654	F-3
C017	B-5	C243	F-3	C514	E-5	D608	F-1	Q030	C-5	R079	C-6	R305	C-9	R483	A-1	R655	F-2
C019	B-5	C244	F-3	C515	E-5	D609	F-2	Q031	C-5	R080	C-6	R306	B-9	R484	A-1	R662	E-3
C020	B-6	C246	D-4	C553	G-6	D610	E-2	Q032	C-7	R083	C-5	R307	C-9	R485	A-1	R663	F-3
C022	B-5	C247	D-4	C554	G-7	D611	E-2	Q038	C-5	R084	C-5	R312	C-9	R486	B-1	R664	F-2
C025	B-6	C249	E-4	C556	G-7	D612	E-2	Q039	C-5	R087	C-5	R324	B-9	R487	A-1	R665	F-3
C038	B-6	C252	F-3	C557	G-5			Q041	B-5	R088	C-5	R326	C-9	R504	E-6	R678	F-3
C040	B-6	C301	B-9	C558	G-5	FB204	F-3	Q042	C-4	R089	C-5	R327	C-9	R508	E-5	R686	E-2
C042	B-5	C302	C-9	C559	F-7	FB205	F-3	Q151	D-8	R090	C-5	R371	E-8	R510	E-5	R687	E-2
C043	B-5	C348	F-7	C563	F-6	FB503	E-5	Q204	D-5	R094	C-5	R372	E-8	R511	E-5	R689	F-3
C048	B-6	C371	E-8	C564	F-6	FB504	E-5	Q205	E-5	R095	D-7	R373	D-9	R512	F-5	R691	F-2
C050	C-6	C372	E-7	C566	G-7			Q208	D-6	R105	C-6	R374	E-8	R527	E-5	R692	F-1
C051	B-5	C378	F-7	C569	G-6	IC152	C-8	Q217	D-4	R106	C-6	R376	E-8	R530	F-7	R704	G-8
C054	B-5	C380	E-7	C572	F-6	IC201	E-4	Q303	C-9	R109	B-4	R377	E-8	R535	E-5	R705	G-7
C056	B-5	C381	E-7	C607	E-2	IC204	F-4	Q306	B-9	R110	B-4	R378	E-8	R536	E-5	R716	G-8
C058	B-6	C382	F-8	C610	F-2	IC371	E-7	Q307	C-9	R112	C-7	R379	E-7	R537	E-6	R717	F-8
C060	C-5	C383	E-8	C611	F-2	IC401	C-2	Q451	B-3	R152	D-8	R382	E-8	R552	G-6	R718	F-7
C066	B-6	C384	E-8	C613	E-1	IC451	A-4	Q454	A-1	R154	D-8	R383	E-8	R555	G-7	R719	F-8
C067	C-6	C385	E-8	C625	E-2	IC452	A-2	Q455	A-1	R157	D-8	R384	E-7	R563	G-5	R723	F-7
C068	C-6	C386	F-8	C626	E-2	IC501	E-6	Q551	G-7	R179	D-8	R385	F-8	R564	G-6	R752	A-7
C069	C-5	C387	F-8	C627	F-2	IC552	G-6	Q607	F-2	R180	D-8	R386	F-8	R566	G-5	R753	A-7
C070	C-6	C388	E-8	C630	F-3	IC602	E-2	Q619	E-3	R183	E-8	R388	E-8	R567	G-6	R754	B-7
C072	C-6	C402	C-1	C634	F-3	IC603	F-1	Q705	F-7	R184	E-7	R389	E-8	R570	F-5	R755	B-7
C074	C-6	C451	A-3	C636	F-2	IC751	B-8	Q901	D-2	R185	D-7	R403	C-2	R579	G-6	R756	B-7
C076	C-5	C452	A-3	C704	F-7					R186	D-7	R404	C-3	R582	G-6	R757	A-7
C080	C-5	C453	A-3	C714	F-8	L002	B-4	R001	A-6	R188	D-8	R415	B-2	R584	G-7	R758	A-7
C083	C-5	C454	A-3	C715	F-8	L003	B-4	R002	A-6	R189	C-7	R416	B-2	R603	F-2	R759	A-7
C086	C-4	C455	A-3	C751	B-7	L007	C-6	R008	A-4	R190	C-8	R417	B-2	R604	F-2	R760	B-8
C087	C-4	C456	A-4	C752	A-7	L008	C-6	R009	A-5	R202	D-3	R418	B-2	R608	F-2	R761	A-8
C090	C-6	C457	A-3	C753	A-7	L010	C-6	R010	B-6	R203	D-4	R426	C-2	R612	E-1	R762	A-8
C152	D-8	C458	A-4	C754	A-7	L011	C-6	R011	B-5	R204	D-3	R427	B-2	R618	F-1	R763	A-8
C157	E-8	C459	A-4	C755	A-7	L015	C-5	R012	B-5	R205	D-3	R428	B-2	R619	F-1	R764	B-8
C158	E-8	C460	A-4	C756	A-7	L019	B-6	R013	B-6	R206	D-4	R429	B-2	R620	F-1	R765	B-8
C159	C-8	C461	A-3	C758	A-8	L152	D-8	R014	B-4	R208	D-3	R430	B-2	R621	F-1	R766	A-8
C174	D-8	C462	A-4	C759	B-7	L204	D-4	R015	B-5	R210	D-3	R432	C-2	R622	F-2	R767	B-8
C175	D-8	C463	A-3	C760	B-7	L205	D-6	R016	B-6	R211	D-3	R433	C-2	R624	F-1	R768	A-8
C176	D-8	C464	B-3	C761	B-8	L206	D-3	R017	B-6	R212	D-5	R434	C-2	R625	F-2	R770	A-8
C182	D-8	C465	B-4	C762	B-8	L552	F-7	R018	B-5	R214	E-5	R435	B-2	R627	F-2	R771	A-8
C183	D-8	C466	B-3	C763	B-8	L602	E-3	R019	B-5	R215	D-5	R442	B-2	R628	F-2	R772	A-8
C190	D-8	C467	B-3	C764	B-8	L701	F-7	R020	B-4	R216	D-5	R443	C-2	R629	F-1	R773	B-8
C191	C-7	C468	B-3	C765	A-8	L702	F-7	R021	B-5	R217	E-4	R452	A-3	R630	F-2	R774	B-9
C192	C-7	C469	B-4	C766	A-8	L704	F-8	R022	C-5	R223	D-3	R453	A-3	R631	G-2	R775	A-8
C202	D-3	C470	B-4	C767	B-8	L751	B-8	R023	B-6	R224	D-3	R454	A-3	R632	G-1	R922	D-1
C203	D-3	C471	B-4	C768	B-8	L752	B-8	R025	B-6	R226	D-4	R455	A-3	R633	E-2	R923	C-1
C205	E-4	C473	A-1	C769	A-8	L753	B-8	R029	B-5	R240	D-4	R456	A-3	R634	E-2	R924	D-1
C206	D-4	C474	A-2	C770	A-8			R031	B-5	R244	D-3	R457	A-3	R635	E-2	R925	D-1
C207	D-3	C475	A-2	C771	B-8	Q003	A-5	R040	B-5	R245	D-4	R459	A-3	R636	E-2	R926	D-1
C208	D-3	C476	A-2	C772	A-8	Q004	A-6	R041	B-5	R246	D-3	R460	A-3	R637	G-2	R927	D-2
C209	D-6	C477	A-2	C773	B-8	Q005	A-5	R042	B-5	R247	D-3	R461	A-3	R638	G-2	R933	D-2
C210	D-6	C478	A-2	C774	A-8	Q006	A-5	R047	B-5	R248	E-3	R462	A-3	R639	G-2		
C211	E-3	C479	A-2	C775	A-8	Q007	A-6	R048	B-5	R249	E-3	R463	A-3	R640	F-2	TH401	C-4
C212	D-3	C479	A-2	C776	B-9	Q008	B-6	R049	B-6	R250	F-3	R467	A-2	R641	F-3		
C213	D-5	C480	A-2	C777	A-9	Q009	B-6	R050	B-6	R254	D-2	R468	A-2	R642	G-2	X151	D-7
C217	D-4	C481	A-1	C778	B-9	Q010	B-5	R051	B-6	R255	E-5	R469	A-2	R643	F-2	X401	C-3
C218	D-4	C483	A-2	C781	B-8	Q011	B-5	R056	B-6	R257	D-4	R470	A-2	R644	G-2	X501	F-5

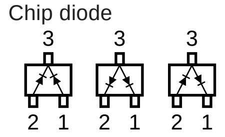
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

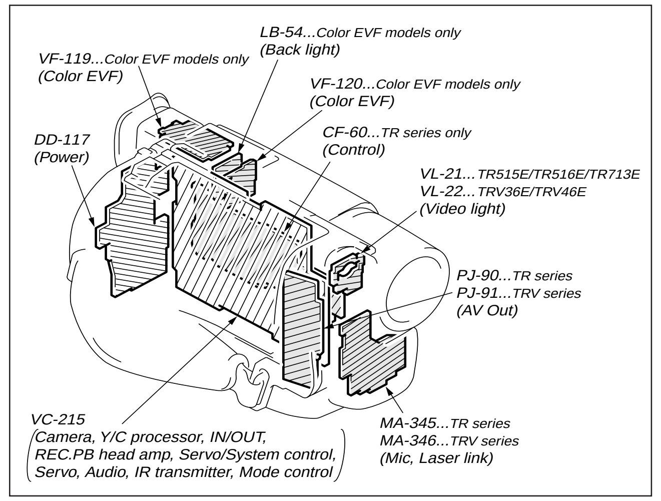
There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor


C
6 5 4
Q
Q
B E
1 2 3

Chip diode

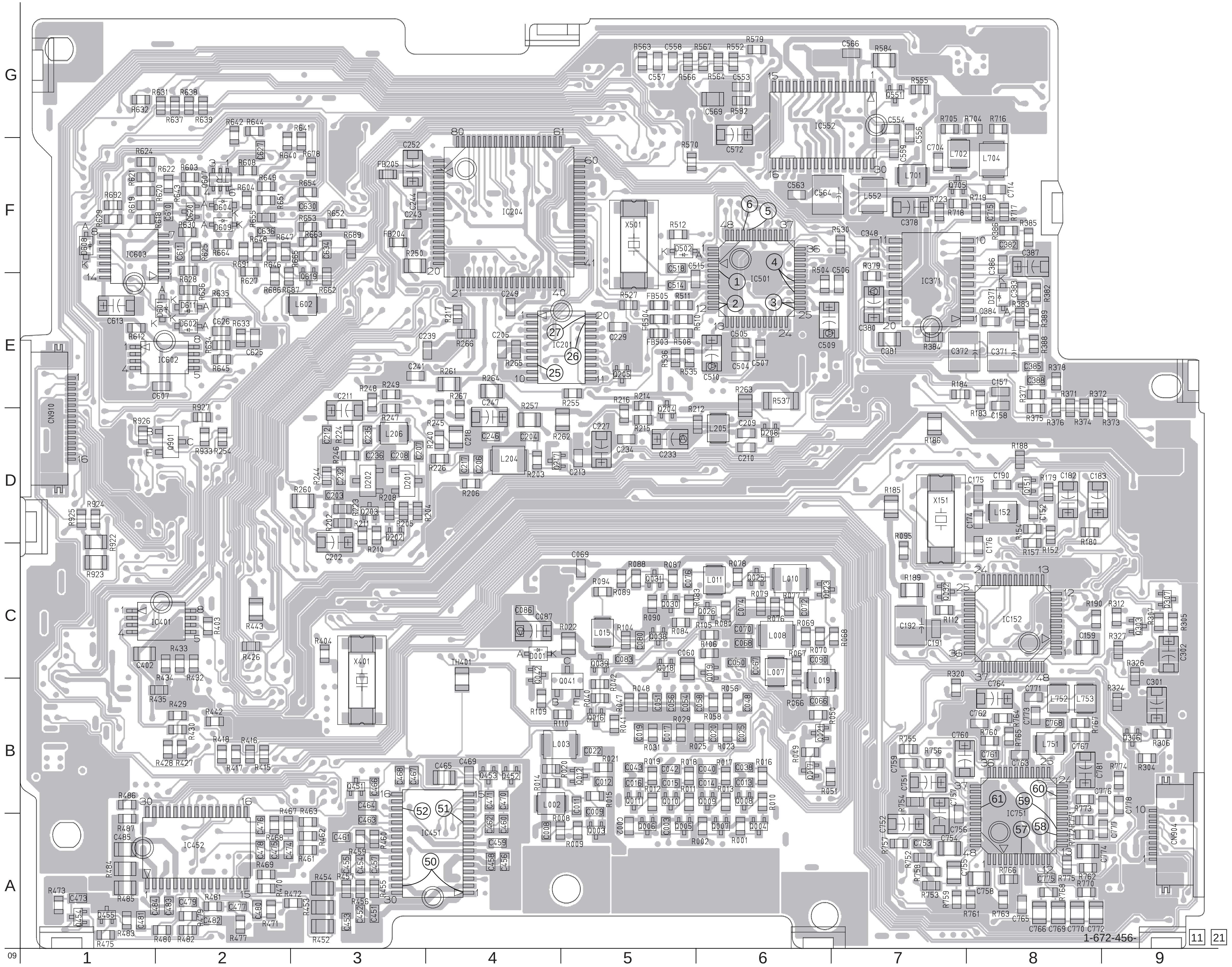



VF-119...Color EVF models only
(Color EVF)
LB-54...Color EVF models only
(Back light)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

VC-215 (CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL) PRINTED WIRING BOARD

– Ref No. VC-215 BOARD: 1,000 series –

VC-215 BOARD (SIDE B)


G
F
E
D
C
B
A
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2
3
4
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6
7
8
9
09
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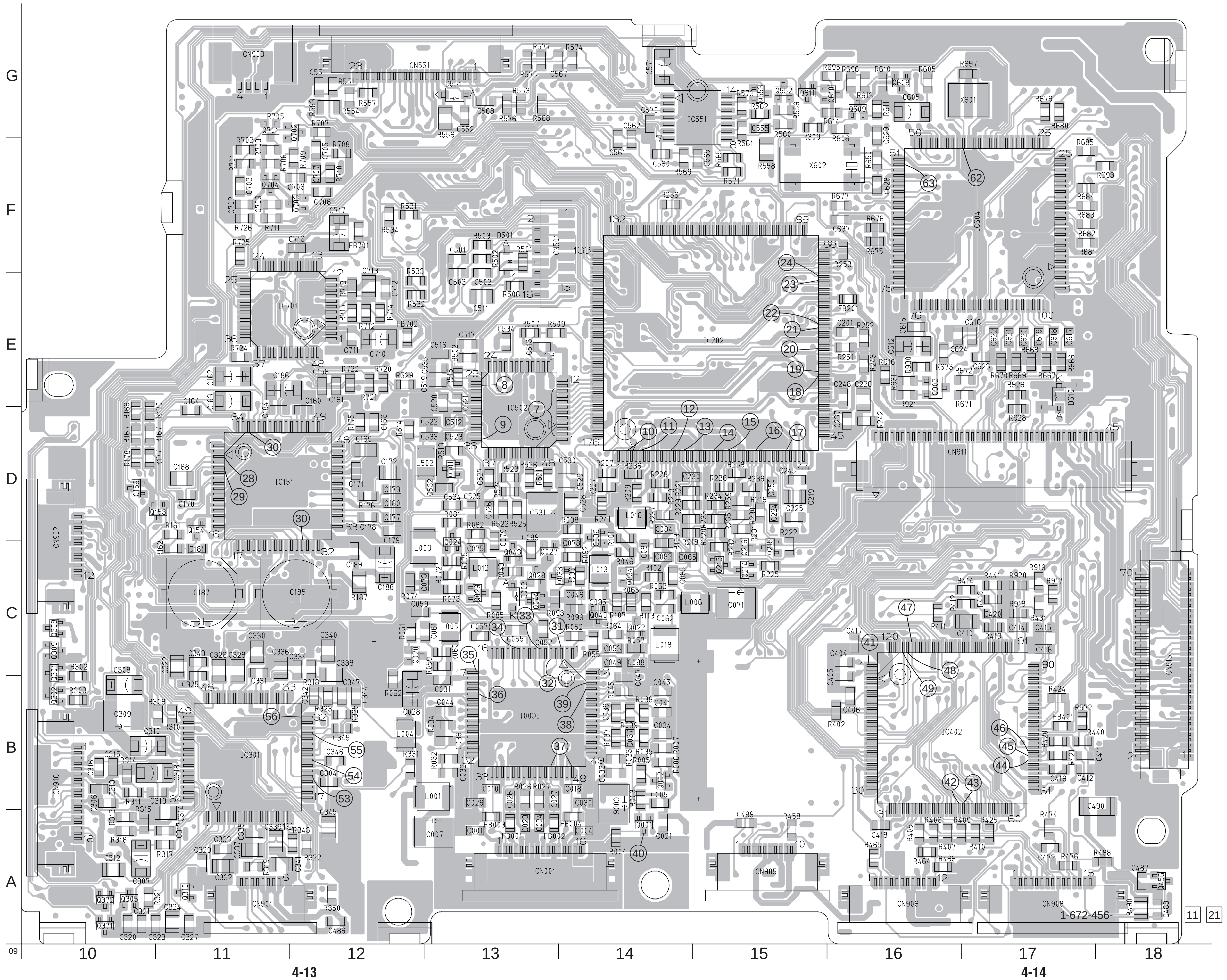
IC201
IC501
IC552
IC371
IC603
IC602
IC401
IC452
IC451
IC152
IC751
X501
X401
X151
CN910
CN904
1-672-456-
11
21

VC-215 BOARD (SIDE A)



VC-215 BOARD
(SIDE A)

C001	A-13
C004	A-14
C005	B-14
C006	B-14
C007	A-13
C010	B-13
C018	B-14
C021	A-14
C023	A-13
C024	A-13
C026	B-13
C027	B-13
C028	B-12
C029	B-13
C030	B-14
C031	B-13
C032	B-13
C033	B-14
C034	B-14
C035	C-14
C036	B-13
C037	B-14
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C062	C-14
C065	C-14
C071	C-15
C073	C-13
C078	C-14
C079	C-13
C081	C-14
C082	C-14
C084	D-14
C085	C-14
C088	C-14
C089	C-13
C156	E-12
C160	D-12
C161	E-12
C162	E-11
C163	E-11
C164	D-11
C166	D-12
C168	D-11
C169	D-12
C170	D-11
C171	D-12
C172	D-12
C173	D-12
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C184	D-11
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C189	C-12
C201	E-16
C219	D-15
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C225	D-15
C226	E-16
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C245	D-15
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C623	E-17
C624	E-16
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C629	G-16
C637	F-16
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Q003	C-14
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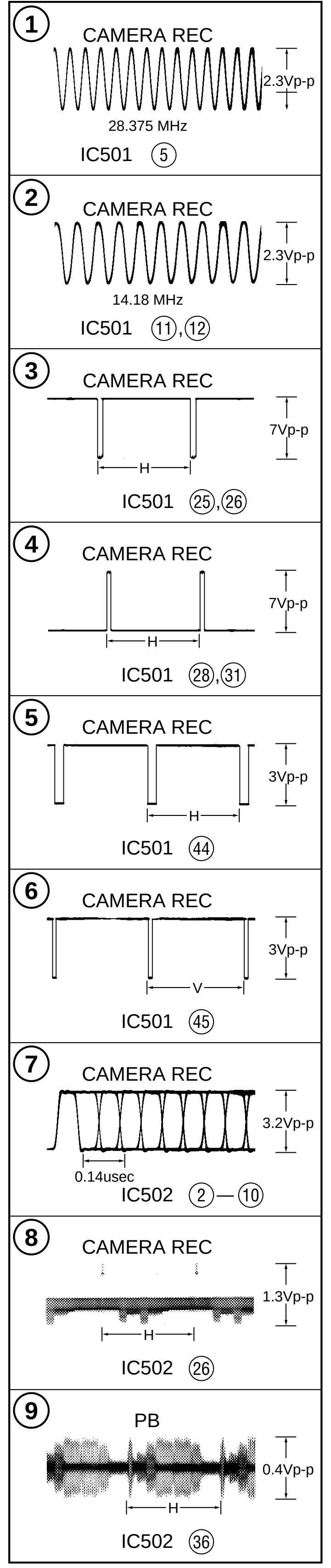
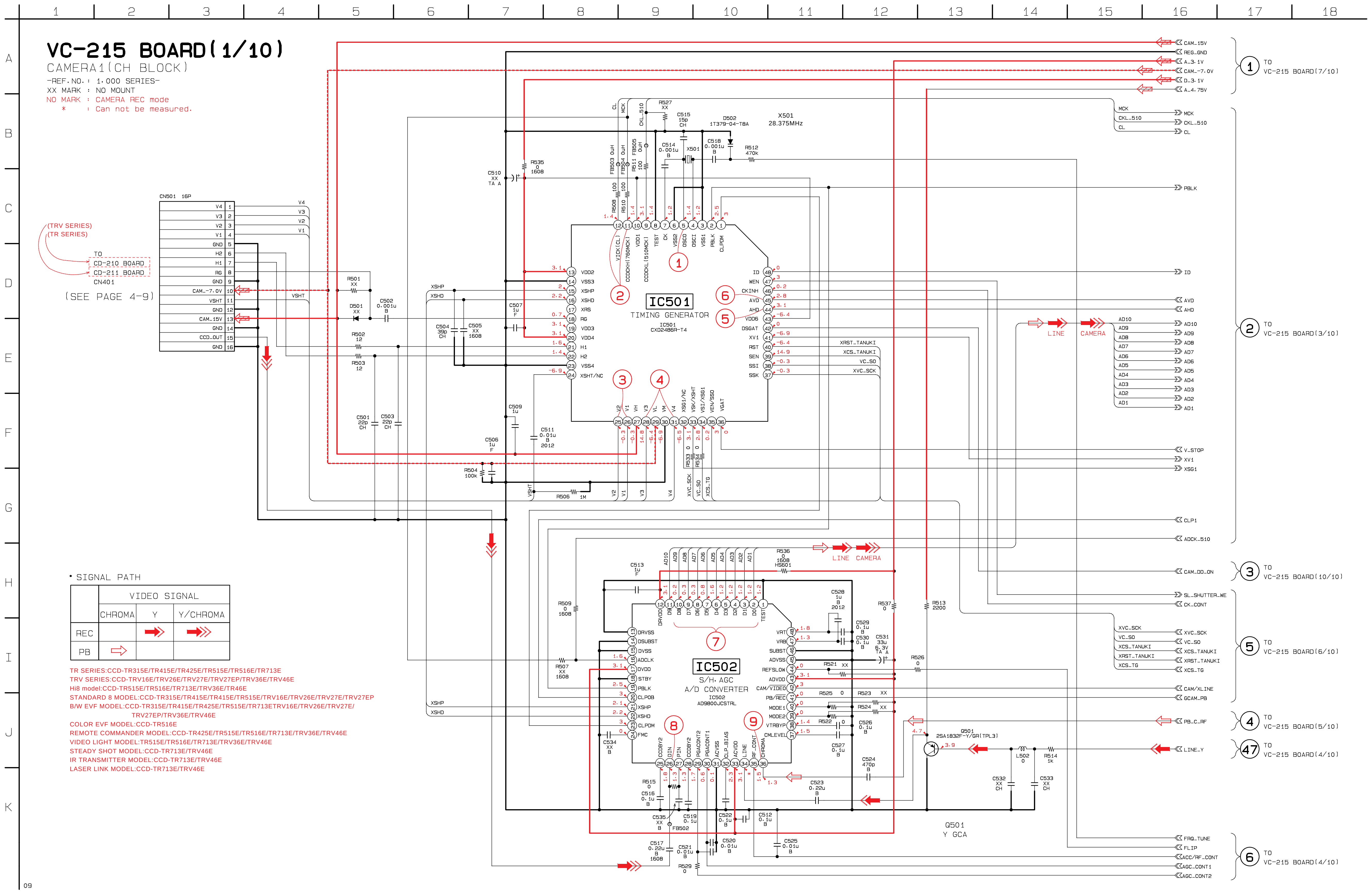
R693	F-18
R695	G-16
R696	G-16
R697	G-17
R701	F-11
R702	F-11
R703	F-11
R705	G-11
R706	F-11
R707	G-12
R708	F-12
R709	F-12
R710	F-12
R711	F-11
R712	E-12
R713	E-12
R714	E-12
R715	E-12
R720	E-12
R721	E-12
R722	E-12
R724	E-11
R725	F-11
R726	F-11
R916	E-16
R917	C-17
R918	C-17
R919	C-17
R920	C-17
R921	E-16
R928	E-17
R929	E-17
R930	E-16
R931	E-16
X601	G-17
X602	F-15

- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.

VC-215 BOARD (1/10)

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K
CN501 16P
V4 1
V3 2
V2 3
V1 4
GND 5
H2 6
H1 7
RG 8
GND 9
CAM_-7.0V 10
VSHT 11
GND 12
CAM_15V 13
GND 14
CCD_OUT 15
GND 16
(TRV SERIES)
(TR SERIES)
TO
CD-210 BOARD
CD-211 BOARD
CN401
(SEE PAGE 4-9)
IC501
TIMING GENERATOR
IC501
CXD2486R-T4
VICK(CL)
CCDCKH(760MCK)
VDD1
CCDCKL(510MCK)
TEST
CK
VSS2
OSCO
OSCI
VSS1
PBLK
CLPDM
VDD2
VSS3
XSHP
XSHD
XRS
RG
VDD3
VDD4
H1
H2
VSS4
XSHT/NC
V2
V1
VH
V3
VL
VM
V4
XSG1/NC
VSK/XSHT
VSI/XSG1
VEN/SSO
VGAT
ID
WEN
CKINH
AVD
AHD
VDD6
DSGAT
XV1
RST
SEN
SSI
SSK
X501
28.375MHz
D502
1T379-01-T8A
IC502
S/H, AGC
A/D CONVERTER
IC502
AD9800JCSTRL
DRVDD
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
TEST
DRVSS
DSUBST
DVSS
ADCLK
DVDD
STBY
PBLK
CLPOB
XSHP
XSHD
CLPDM
FMC
CCDBY2
DIN
PIN
CCDBY2
PGACONT2
PGACONT1
ACVSS
CLP_BIAS
ACVDD
LINE
RF_CONT
CHROMA
VRT
VRB
SUBST
ADVSS
REFSLOW
ADVDD
CAM/VIDEO
PB/REC
MODE1
MODE2
VTRBYP
CMLEVEL
LINE
CAMERA
Q501
2SA1832F-Y/GR(TPL3)
Q501
Y GCA
CAM_15V
REG_GND
A_3.1V
CAM_-7.0V
D_3.1V
A_4.75V
① TO VC-215 BOARD(7/10)
MCK
CKL_510
CL
PBLK
ID
AVD
AHD
AD10
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
V_STOP
XV1
XSG1
CLP1
ADCK_510
② TO VC-215 BOARD(3/10)
CAM_DD_ON
③ TO VC-215 BOARD(10/10)
SL_SHUTTER_WE
CK_CONT
XVC_SCK
VC_SO
XCS_TANUKI
XRST_TANUKI
XCS_TG
CAM/XLINE
GCAM_PB
⑤ TO VC-215 BOARD(6/10)
PB_C_RF
④ TO VC-215 BOARD(5/10)
LINE_Y
㊼ TO VC-215 BOARD(4/10)
FRQ_TUNE
FLIP
ACC/RF_CONT
AGC_CONT1
AGC_CONT2
⑥ TO VC-215 BOARD(4/10)
09

VC-215 BOARD(1/10)

CAMERA1(CH BLOCK)

-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.

- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡»	➡»»
PB	⇨		

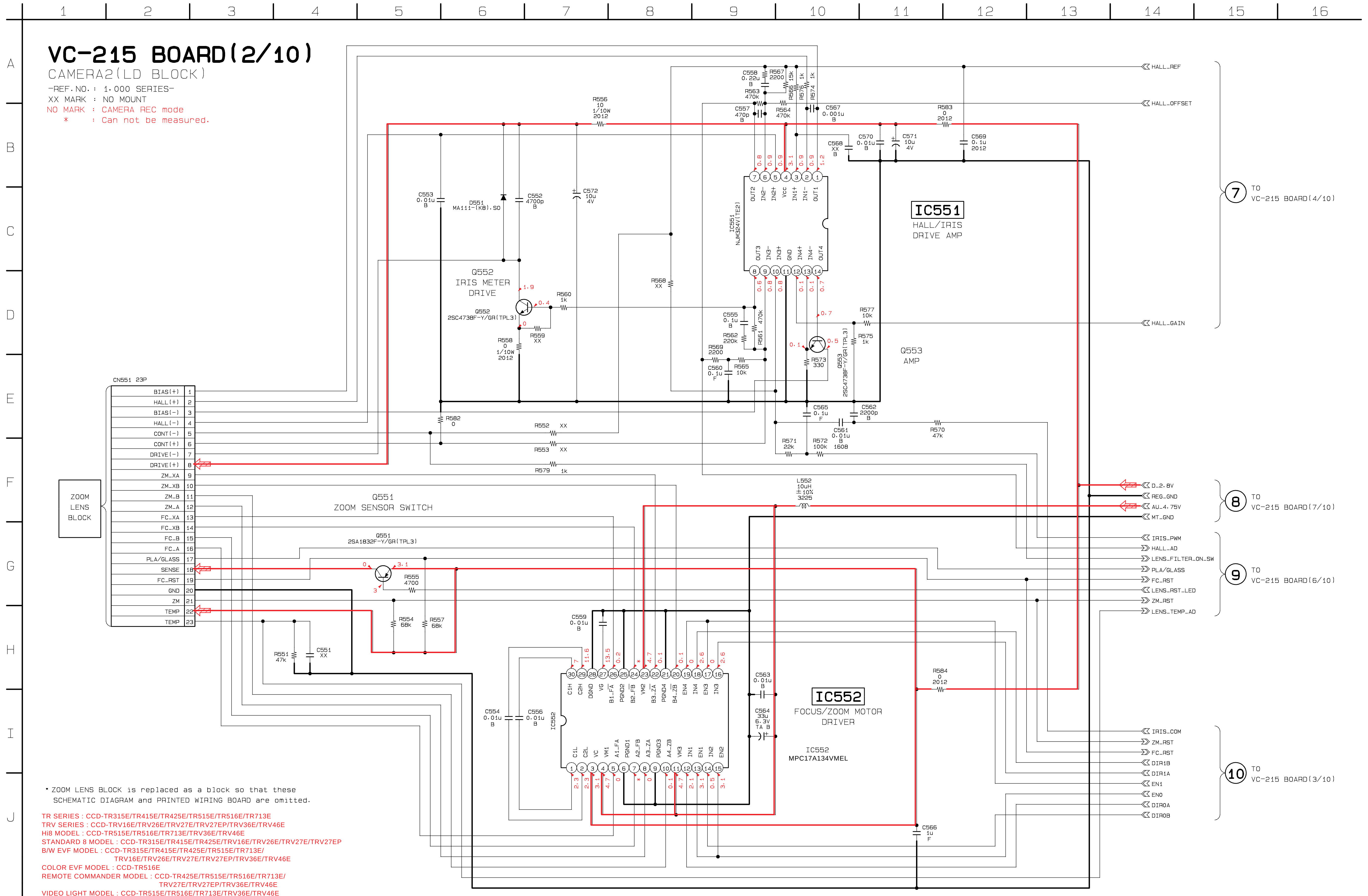
TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 model:CCD-TR515E/TR516E/TR713E/TRV36E/TR46E
STANDARD 8 MODEL:CCD-TR315E/TR415E/TR415E/TR515E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL:CCD-TR315E/TR415E/TR425E/TR515E/TR713ETRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL:CCD-TR516E
REMOTE COMMANDER MODEL:CCD-TR425E/TR515E/TR516E/TR713E/TRV36E/TRV46E
VIDEO LIGHT MODEL:TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL:CCD-TR713E/TRV46E
IR TRANSMITTER MODEL:CCD-TR713E/TRV46E
LASER LINK MODEL:CCD-TR713E/TRV46E

- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.

VC-215 BOARD(2/10)

CAMERA2(LD BLOCK)

-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.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G
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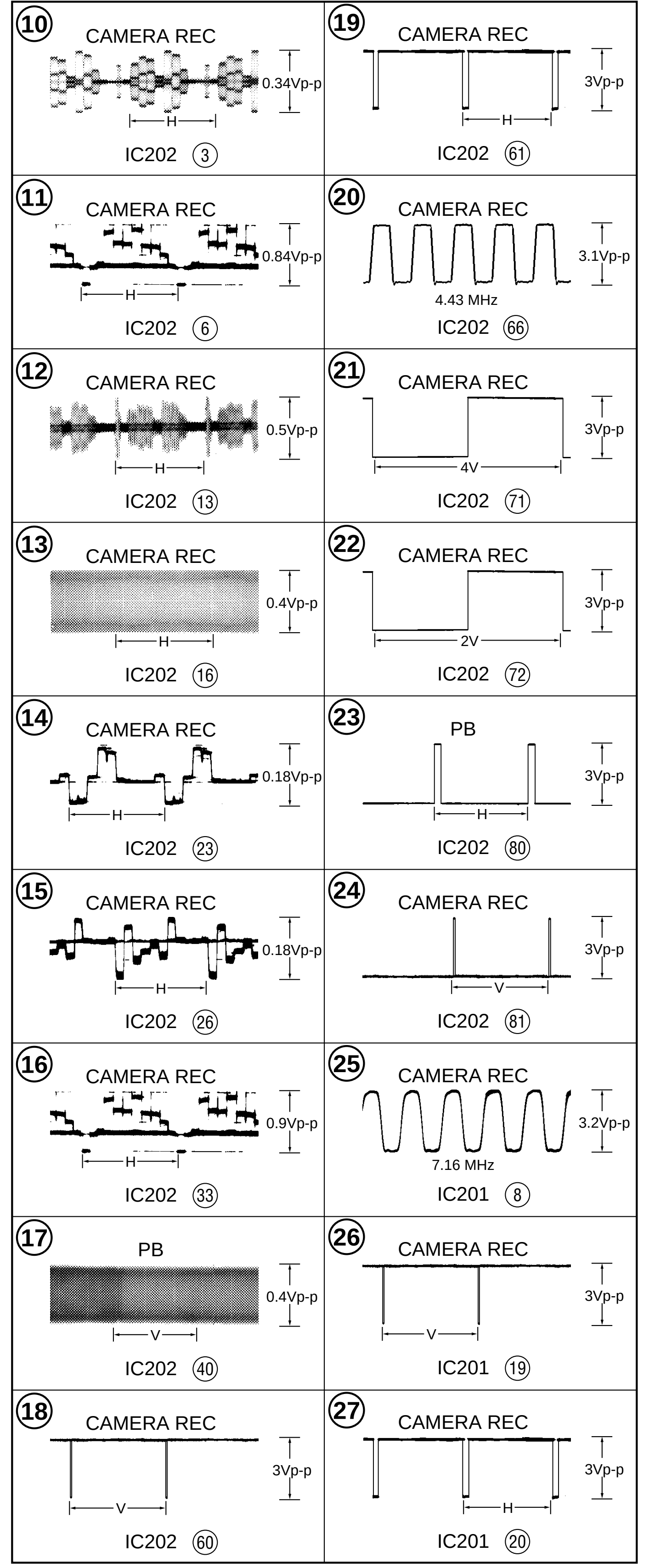
I
J
IC551
HALL/IRIS
DRIVE AMP
Q552
IRIS METER
DRIVE
2SC4738F-Y/GR(TPL3)
Q553
AMP
Q551
ZOOM SENSOR SWITCH
2SA1832F-Y/GR(TPL3)
IC552
FOCUS/ZOOM MOTOR
DRIVER
MPC17A134VMEL
CN551 23P
BIAS(+) 1
HALL(+) 2
BIAS(-) 3
HALL(-) 4
CONT(-) 5
CONT(+) 6
DRIVE(-) 7
DRIVE(+) 8
ZM_XA 9
ZM_XB 10
ZM_B 11
ZM_A 12
FC_XA 13
FC_XB 14
FC_B 15
FC_A 16
PLA/GLASS 17
SENSE 18
FC_RST 19
GND 20
ZM 21
TEMP 22
TEMP 23
ZOOM
LENS
BLOCK
HALL_REF
HALL_OFFSET
HALL_GAIN
7 TO VC-215 BOARD(4/10)
D_2.8V
REG_GND
AU_4.75V
MT_GND
8 TO VC-215 BOARD(7/10)
IRIS_PWM
HALL_AD
LENS_FILTER_ON_SW
PLA/GLASS
FC_RST
LENS_RST_LED
ZM_RST
LENS_TEMP_AD
9 TO VC-215 BOARD(6/10)
IRIS_COM
ZM_RST
FC_RST
DIR1B
DIR1A
EN1
EN0
DIR0A
DIR0B
10 TO VC-215 BOARD(3/10)
L552
10uH
0.1A
3225

- ZOOM LENS BLOCK is replaced as a block so that these SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.

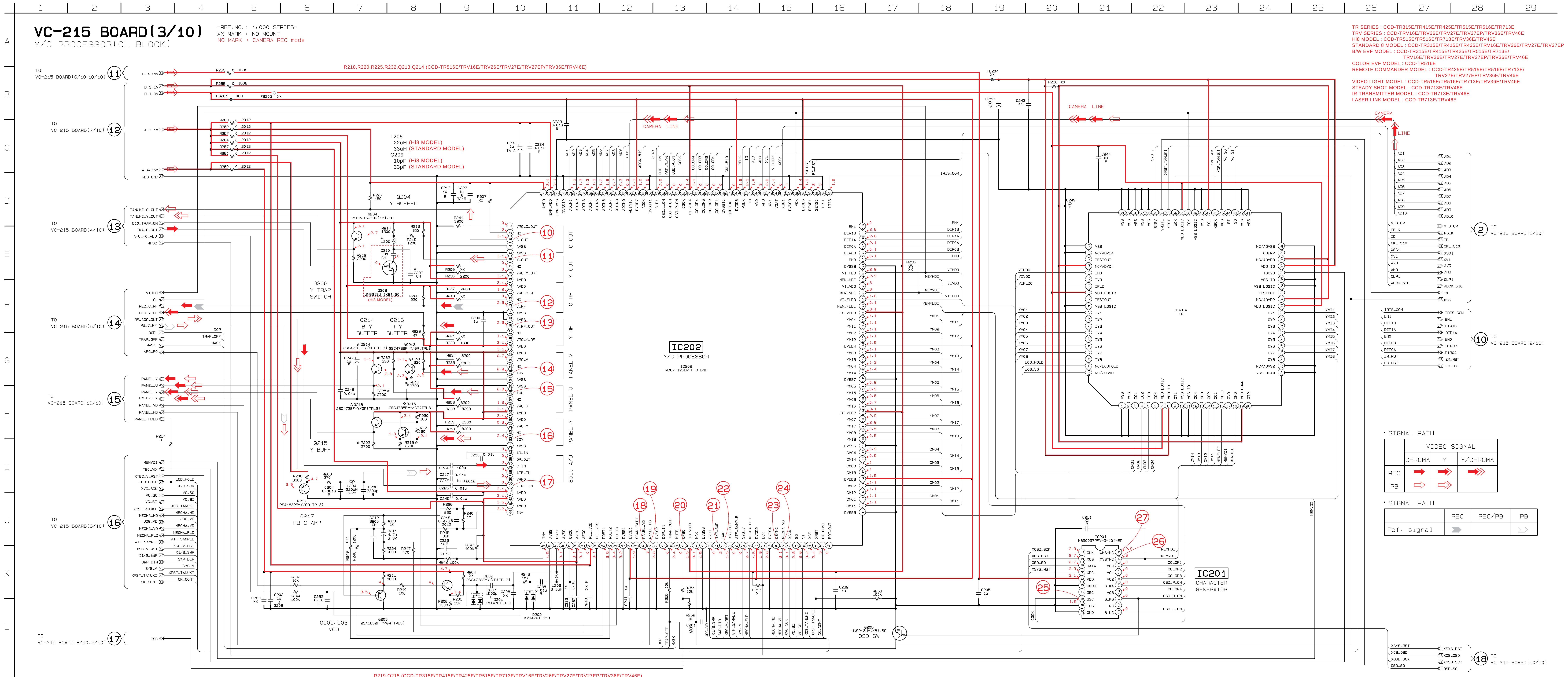
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

09

VC-215 BOARD (3/10)



- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.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A
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C
D
E
F
G
H
I
J
K
L
TO VC-215 BOARD(6/10,10/10) ⑪
E_3.15V
D_3.1V
D_1.9V
R265 0 1608
R266 0 1608
FB201 0uH
FB205 XX
TO VC-215 BOARD(7/10) ⑫
TO VC-215 BOARD(4/10) ⑬
TO VC-215 BOARD(5/10) ⑭
TO VC-215 BOARD(10/10) ⑮
TO VC-215 BOARD(6/10) ⑯
TO VC-215 BOARD(8/10,9/10) ⑰
L205 22uH (Hi8 MODEL) 33uH (STANDARD MODEL)
C209 10pF (Hi8 MODEL) 33pF (STANDARD MODEL)
Q204 Y BUFFER
Q208 Y TRAP SWITCH
Q214 B-Y BUFFER
Q213 R-Y BUFFER
Q215 Y BUFF
Q217 PB C AMP
Q202,203 VCO
IC202 Y/C PROCESSOR
IC202 MB87F1360PFV-G-BND
IC204
IC201 CHARACTER GENERATOR
IC201 MB90097PFV-G-104-ER
Q205 OSD SW
CAMERA LINE
CAMERA
LINE
TO VC-215 BOARD(1/10) ②
TO VC-215 BOARD(2/10) ⑩
TO VC-215 BOARD(10/10) ⑱
C_OUT
Y_OUT
C_RF
Y_RF
PANEL_V
PANEL_U
PANEL_Y
8bit A/D

VC-215 BOARD(3/10)
Y/C PROCESSOR(CL BLOCK)

-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

R218,R220,R225,R232,Q213,Q214 (CCD-TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

- SIGNAL PATH

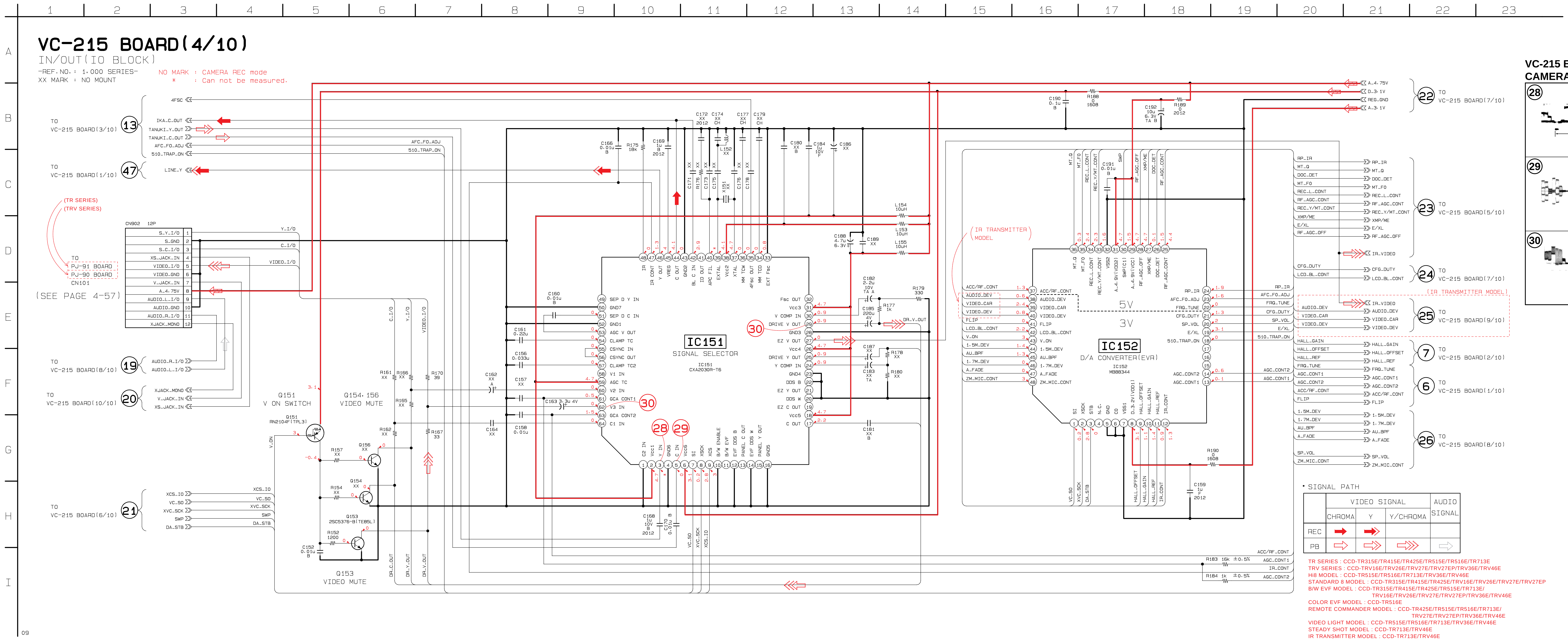
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	➡»»
PB	⇨	⇨»	

- SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		⊳

R219,Q215 (CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R222,Q216 (CCD-TR516E)

- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.

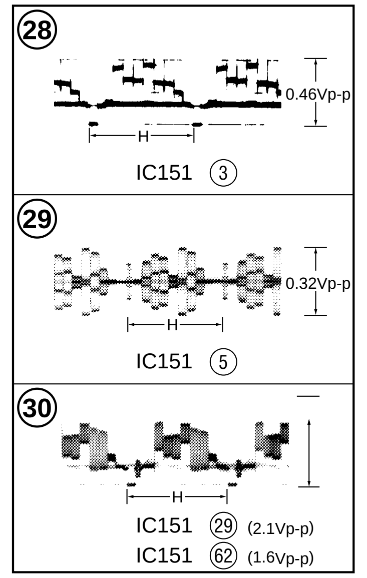

VC-215 BOARD(4/10)
IN/OUT(IO BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.
TO VC-215 BOARD(3/10) 13
TO VC-215 BOARD(1/10) 47
(TR SERIES)
(TRV SERIES)
TO PJ-91 BOARD
PJ-90 BOARD
CN101
(SEE PAGE 4-57)
CN902 12P
TO VC-215 BOARD(8/10) 19
TO VC-215 BOARD(10/10) 20
TO VC-215 BOARD(6/10) 21
Q151 V ON SWITCH
Q154-156 VIDEO MUTE
Q153 VIDEO MUTE
IC151 SIGNAL SELECTOR CXA2030R-T6
IC152 D/A CONVERTER(EVR) MB88344
(IR TRANSMITTER MODEL)
TO VC-215 BOARD(7/10) 22
TO VC-215 BOARD(5/10) 23
TO VC-215 BOARD(7/10) 24
TO VC-215 BOARD(9/10) 25
TO VC-215 BOARD(2/10) 7
TO VC-215 BOARD(1/10) 6
TO VC-215 BOARD(8/10) 26

• SIGNAL PATH

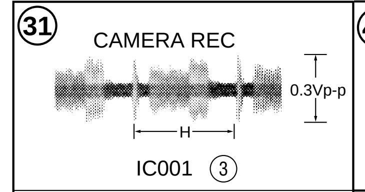
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»		
PB	⇨	⇨»	⇨»»	⇨

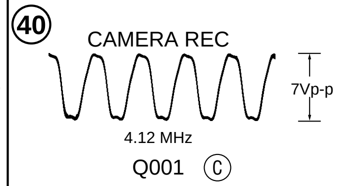
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

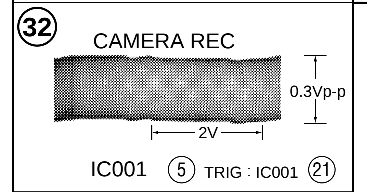
VC-215 BOARD (4/10)
CAMERA REC

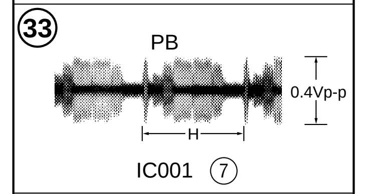


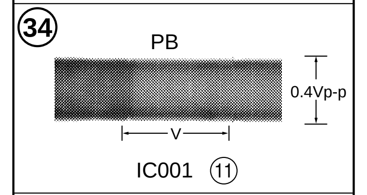
VC-215 BOARD (5/10)

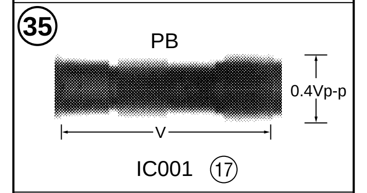


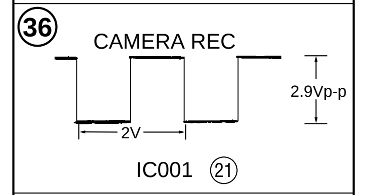


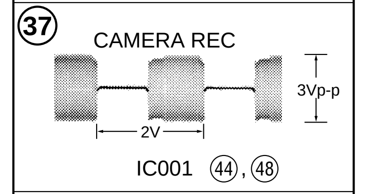


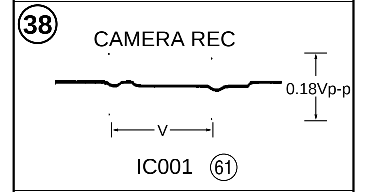


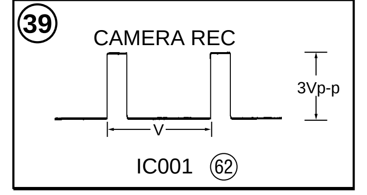




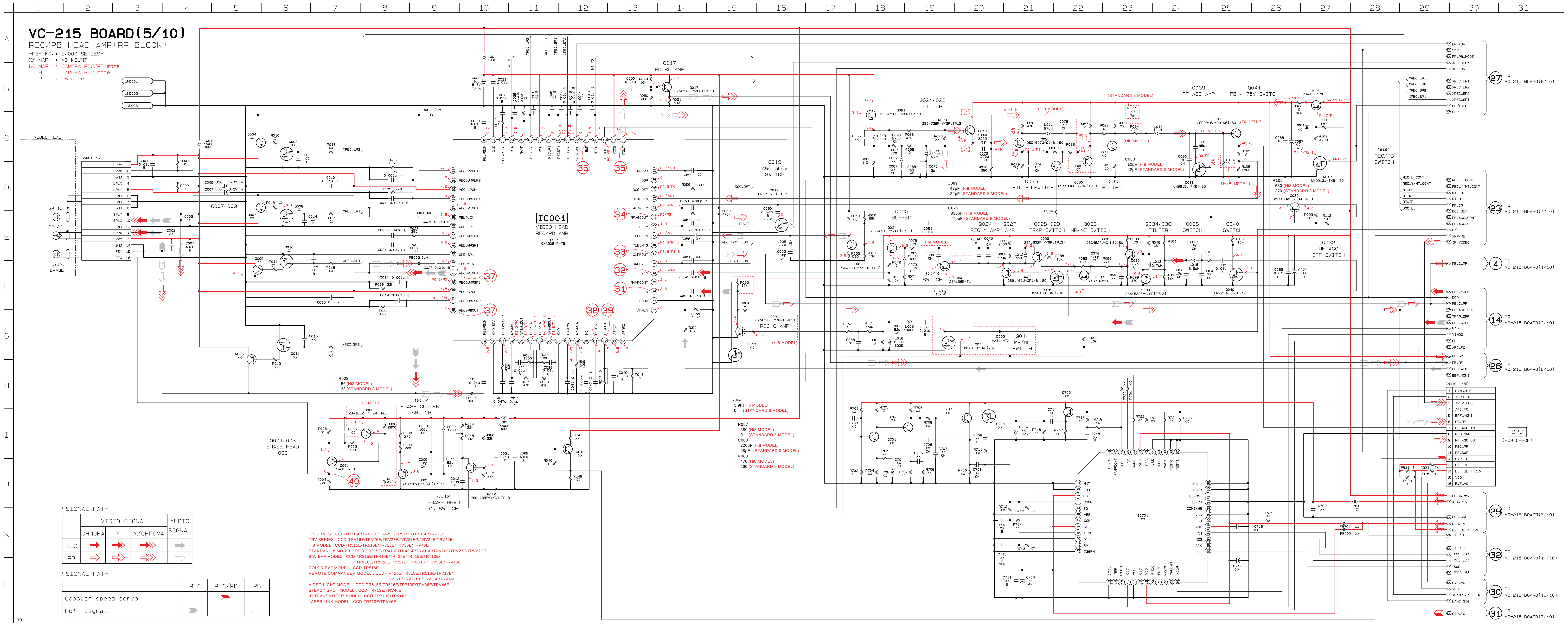








- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.



VC-215 BOARD(5/10)

REC/PB HEAD AMP(RR BLOCK)

-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC/PB mode
R : CAMERA REC mode
P : PB mode

IC001
VIDEO HEAD
REC/PB AMP
IC001
CXA2064S-T6
Q017
PB RF AMP
Q019
AGC SLOW
SWITCH
Q020
BUFFER
Q021-023
FILTER
Q039
RF AGC AMP
Q041
PB 4.75V SWITCH
Q042
REC/PB
SWITCH
Q032
RF AGC
OFF SWITCH
Q002
ERASE CURRENT
SWITCH
Q001-003
ERASE HEAD
OSC
Q012
ERASE HEAD
ON SWITCH
Q007-009
Q022
REC C AMP
Q044
MP/ME
SWITCH
IC701
VIDEO HEAD
FLYING
ERASE
TO VC-215 BOARD(6/10)
TO VC-215 BOARD(4/10)
TO VC-215 BOARD(1/10)
TO VC-215 BOARD(3/10)
TO VC-215 BOARD(8/10)
TO VC-215 BOARD(7/10)
TO VC-215 BOARD(10/10)
CPC
(FOR CHECK)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➤	
Ref. signal	➤		➢

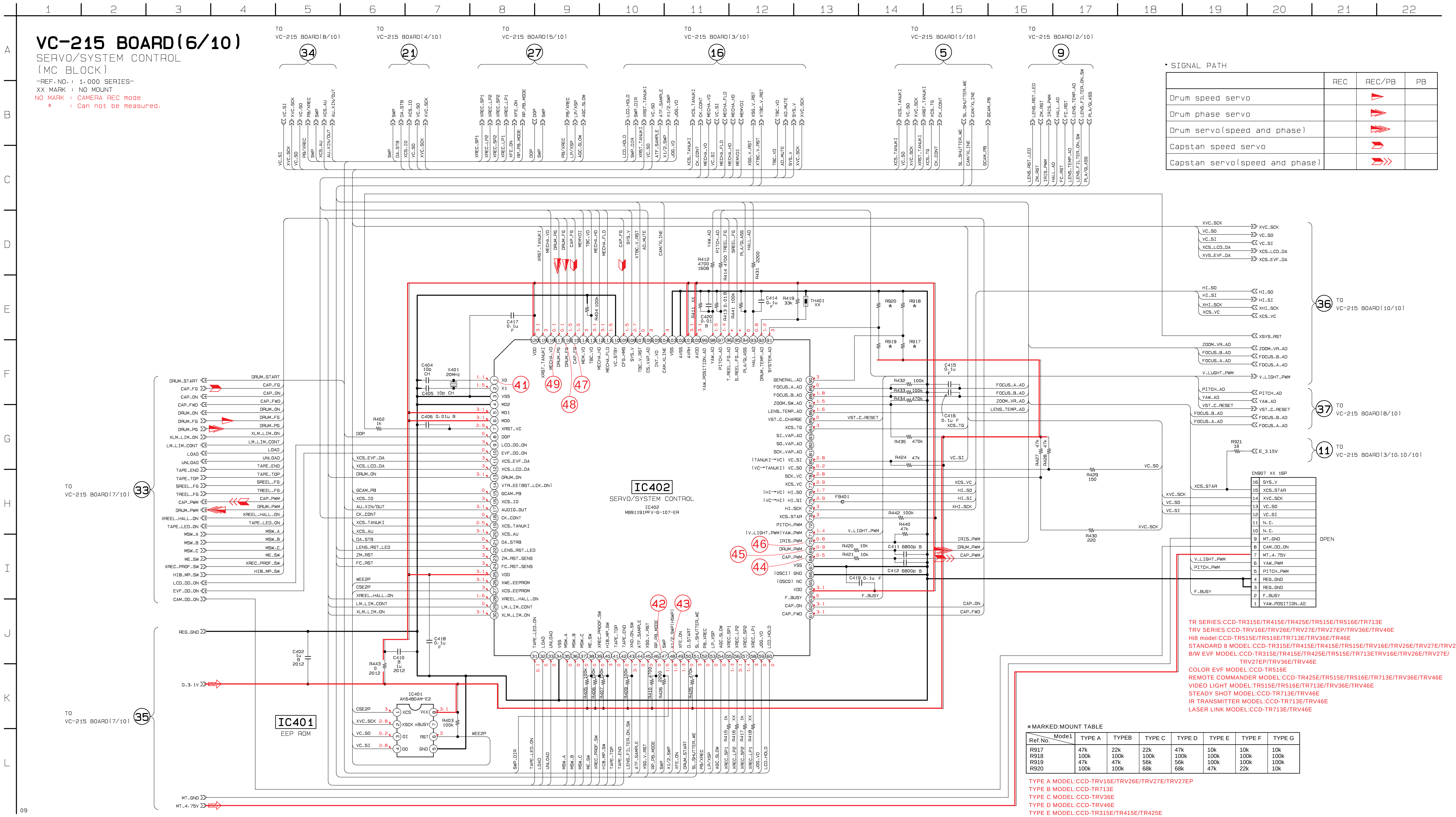
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.

VC-215 BOARD(6/10)

SERVO/SYSTEM CONTROL
(MC BLOCK)

-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.


TO VC-215 BOARD(8/10) 34
TO VC-215 BOARD(4/10) 21
TO VC-215 BOARD(5/10) 27
TO VC-215 BOARD(3/10) 16
TO VC-215 BOARD(1/10) 5
TO VC-215 BOARD(2/10) 9
TO VC-215 BOARD(7/10) 33
TO VC-215 BOARD(7/10) 35
TO VC-215 BOARD(10/10) 36
TO VC-215 BOARD(8/10) 37
TO VC-215 BOARD(3/10,10/10) 11
IC402
SERVO/SYSTEM CONTROL
IC402 MB91191PFV-G-107-ER
IC401
EEP ROM
IC401 AK6480AM-E2
X401 20MHz
CN907 XX 16P
OPEN
41
42
43
44
45
46
47
48
49

• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶	
Drum servo(speed and phase)		▶	
Capstan speed servo		▶	
Capstan servo(speed and phase)		▶	

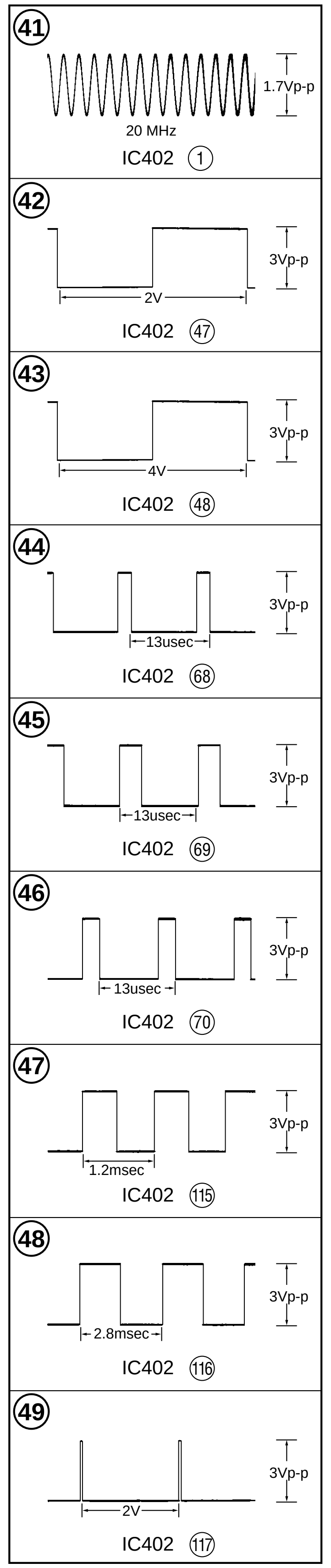
TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 model:CCD-TR515E/TR516E/TR713E/TRV36E/TR46E
STANDARD 8 MODEL:CCD-TR315E/TR415E/TR415E/TR515E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL:CCD-TR315E/TR415E/TR425E/TR515E/TR713ETRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL:CCD-TR516E
REMOTE COMMANDER MODEL:CCD-TR425E/TR515E/TR516E/TR713E/TRV36E/TRV46E
VIDEO LIGHT MODEL:TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL:CCD-TR713E/TRV46E
IR TRANSMITTER MODEL:CCD-TR713E/TRV46E
LASER LINK MODEL:CCD-TR713E/TRV46E

☆MARKED:MOUNT TABLE

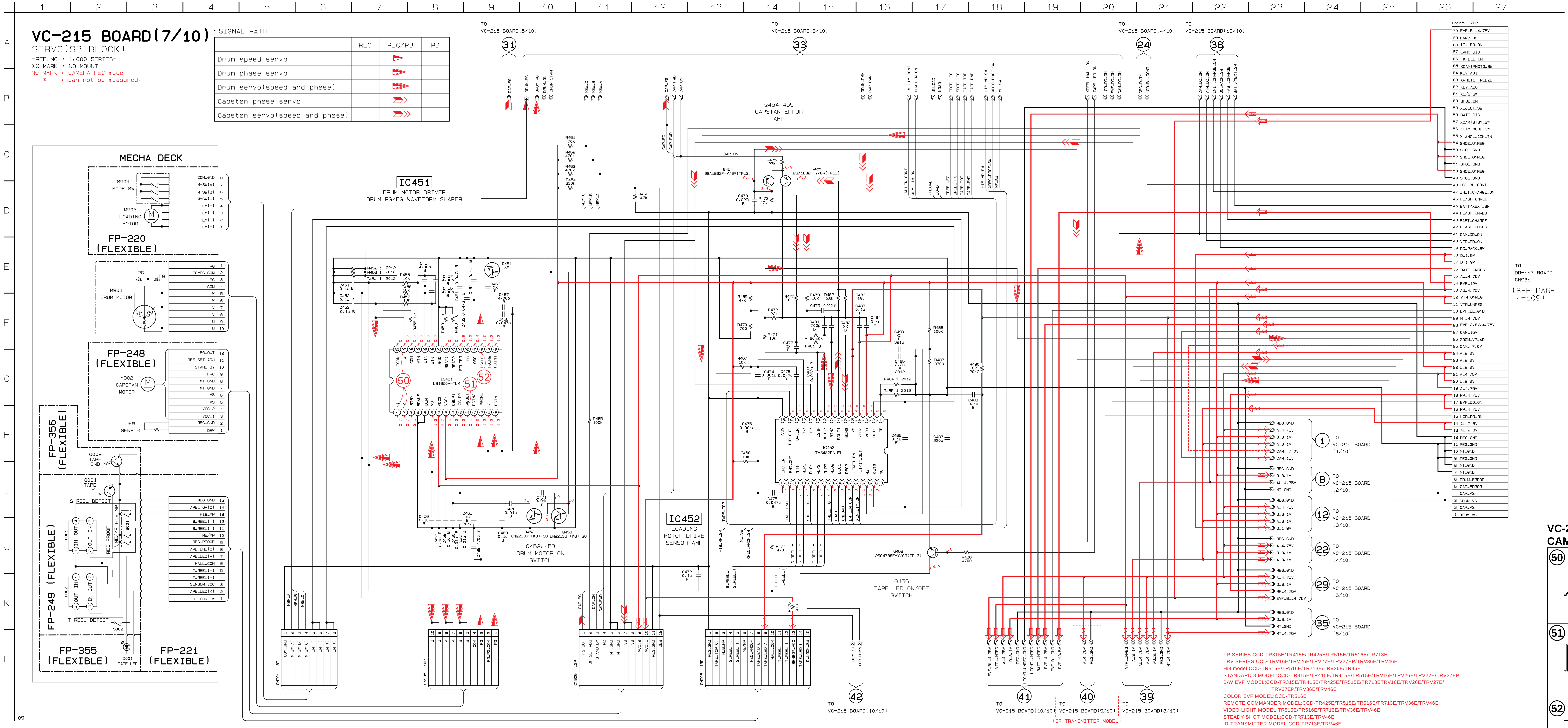
Ref.No. \ Mode1	TYPE A	TYPEB	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G
R917	47k	22k	22k	47k	10k	10k	10k
R918	100k	100k	100k	100k	100k	100k	100k
R919	47k	47k	56k	56k	100k	100k	100k
R920	100k	100k	68k	68k	47k	22k	10k

TYPE A MODEL:CCD-TRV16E/TRV26E/TRV27E/TRV27EP
TYPE B MODEL:CCD-TR713E
TYPE C MODEL:CCD-TRV36E
TYPE D MODEL:CCD-TRV46E
TYPE E MODEL:CCD-TR315E/TR415E/TR425E
TYPE F MODEL:CCD-TR515E
TYPE G MODEL:CCD-TR516E

VC-215 BOARD (6/10)
CAMERA REC



- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.



VC-215 BOARD(7/10)

SERVO(SB BLOCK)

-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.

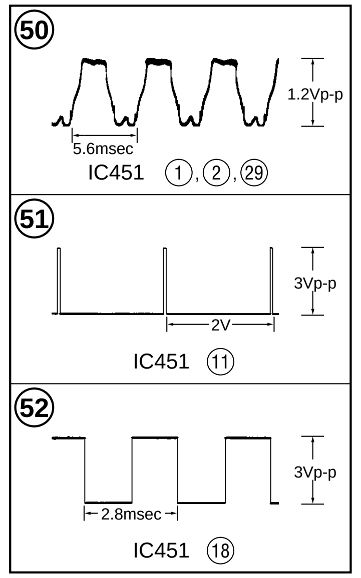
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		⇒	
Drum servo(speed and phase)		⇛	
Capstan phase servo		➡»	
Capstan servo(speed and phase)		➡»»	

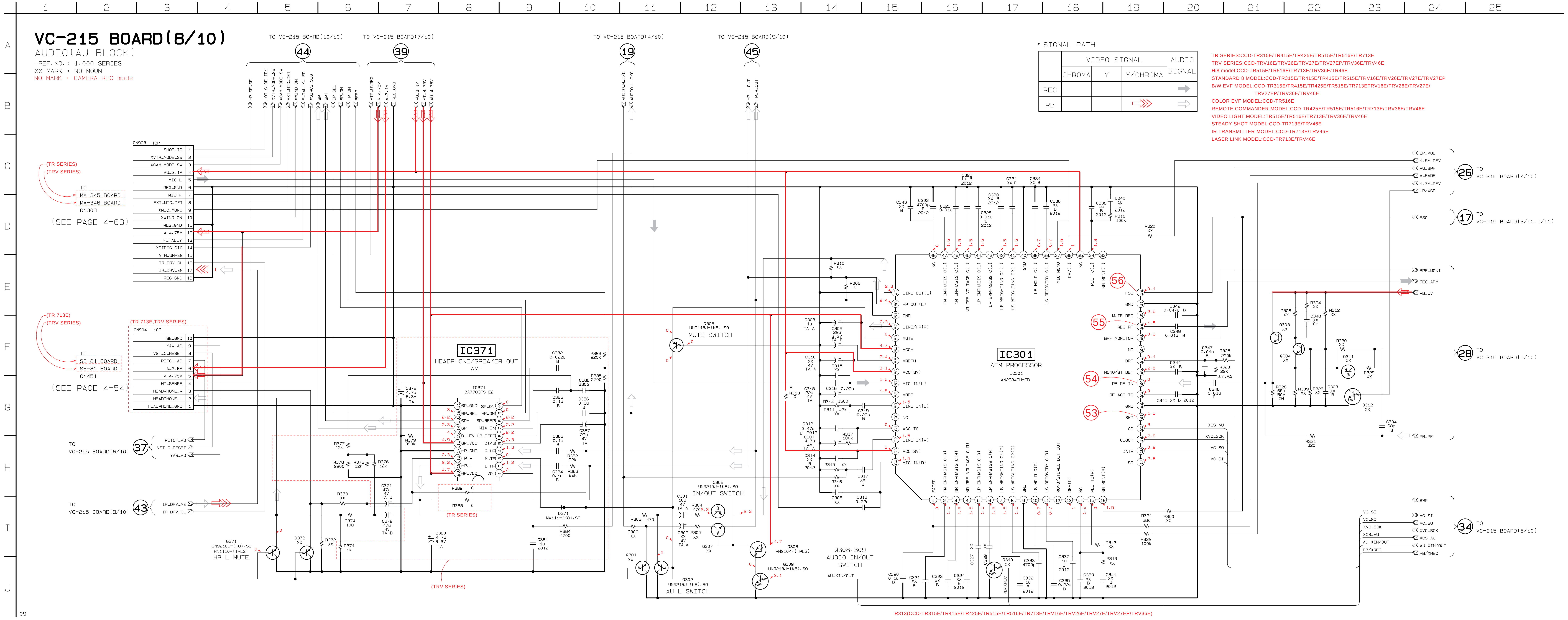
MECHA DECK
S901 MODE SW
M903 LOADING MOTOR
FP-220 (FLEXIBLE)
M901 DRUM MOTOR
FP-248 (FLEXIBLE)
M902 CAPSTAN MOTOR
DEW SENSOR
FP-356 (FLEXIBLE)
Q002 TAPE END
Q001 TAPE TOP
S REEL DETECT
T REEL DETECT
FP-249 (FLEXIBLE)
FP-355 (FLEXIBLE)
D001 TAPE LED
FP-221 (FLEXIBLE)
IC451
DRUM MOTOR DRIVER
DRUM PG/FG WAVEFORM SHAPER
IC451 LB1950V-TLM
Q452, 453
DRUM MOTOR ON SWITCH
Q454, 455
CAPSTAN ERROR AMP
IC452
LOADING MOTOR DRIVE SENSOR AMP
IC452 TA8482FN-EL
Q456
TAPE LED ON/OFF SWITCH
CN915 70P
TO DD-117 BOARD CN931 (SEE PAGE 4-109)
TO VC-215 BOARD(5/10)
TO VC-215 BOARD(6/10)
TO VC-215 BOARD(4/10)
TO VC-215 BOARD(10/10)
TO VC-215 BOARD(1/10)
TO VC-215 BOARD(2/10)
TO VC-215 BOARD(3/10)
TO VC-215 BOARD(9/10)
TO VC-215 BOARD(8/10)
(IR TRANSMITTER MODEL)

TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 model:CCD-TR515E/TR516E/TR713E/TRV36E/TR46E
STANDARD 8 MODEL:CCD-TR315E/TR415E/TR415E/TR515E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL:CCD-TR315E/TR415E/TR425E/TR515E/TR713ETRV16E/TRV26E/TRV27E/
TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL:CCD-TR516E
REMOTE COMMANDER MODEL:CCD-TR425E/TR515E/TR516E/TR713E/TRV36E/TRV46E
VIDEO LIGHT MODEL:TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL:CCD-TR713E/TRV46E
IR TRANSMITTER MODEL:CCD-TR713E/TRV46E
LASER LINK MODEL:CCD-TR713E/TRV46E

VC-215 BOARD (7/10)
CAMERA REC



- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.


VC-215 BOARD(8/10)
AUDIO(AU BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO VC-215 BOARD(10/10)
TO VC-215 BOARD(7/10)
TO VC-215 BOARD(4/10)
TO VC-215 BOARD(9/10)
44
39
19
45
CN903 18P
CN904 10P
(TR SERIES)
(TRV SERIES)
TO MA-345 BOARD MA-346 BOARD CN303
(SEE PAGE 4-63)
(TR 713E)
(TRV SERIES)
(TR 713E,TRV SERIES)
TO SE-81 BOARD SE-80 BOARD CN451
(SEE PAGE 4-54)
TO VC-215 BOARD(6/10)
37
TO VC-215 BOARD(9/10)
43
IC371
HEADPHONE/SPEAKER OUT AMP
IC371 BA7783FS-E2
(TR SERIES)
Q371 UN9216J-(K8).SO RN1110F(TPL3) HP L MUTE
Q305 UN9115J-(K8).SO MUTE SWITCH
Q306 UN9215J-(K8).SO IN/OUT SWITCH
Q308, 309 AUDIO IN/OUT SWITCH
Q303 UN9216J-(K8).SO AU L SWITCH
IC301
AFM PROCESSOR
IC301 AN2984FH-EB
53
54
55
56
TO VC-215 BOARD(4/10)
26
TO VC-215 BOARD(3/10,9/10)
17
TO VC-215 BOARD(5/10)
28
TO VC-215 BOARD(6/10)
34
09

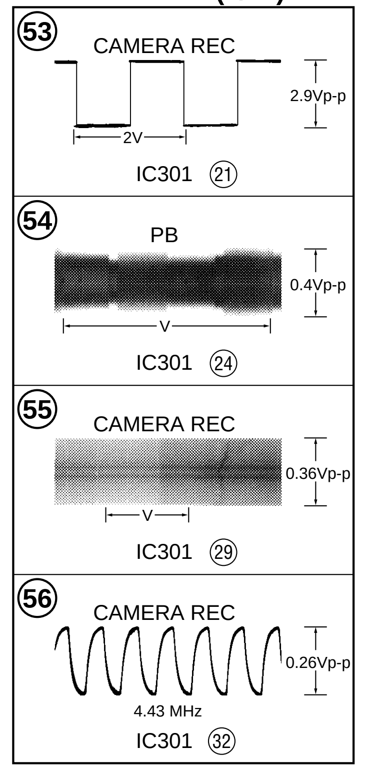
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨≫	⇨

TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 model:CCD-TR515E/TR516E/TR713E/TRV36E/TR46E
STANDARD 8 MODEL:CCD-TR315E/TR415E/TR415E/TR515E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL:CCD-TR315E/TR415E/TR425E/TR515E/TR713ETRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL:CCD-TR516E
REMOTE COMMANDER MODEL:CCD-TR425E/TR515E/TR516E/TR713E/TRV36E/TRV46E
VIDEO LIGHT MODEL:TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL:CCD-TR713E/TRV46E
IR TRANSMITTER MODEL:CCD-TR713E/TRV46E
LASER LINK MODEL:CCD-TR713E/TRV46E

R313(CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)

VC-215 BOARD (8/10)

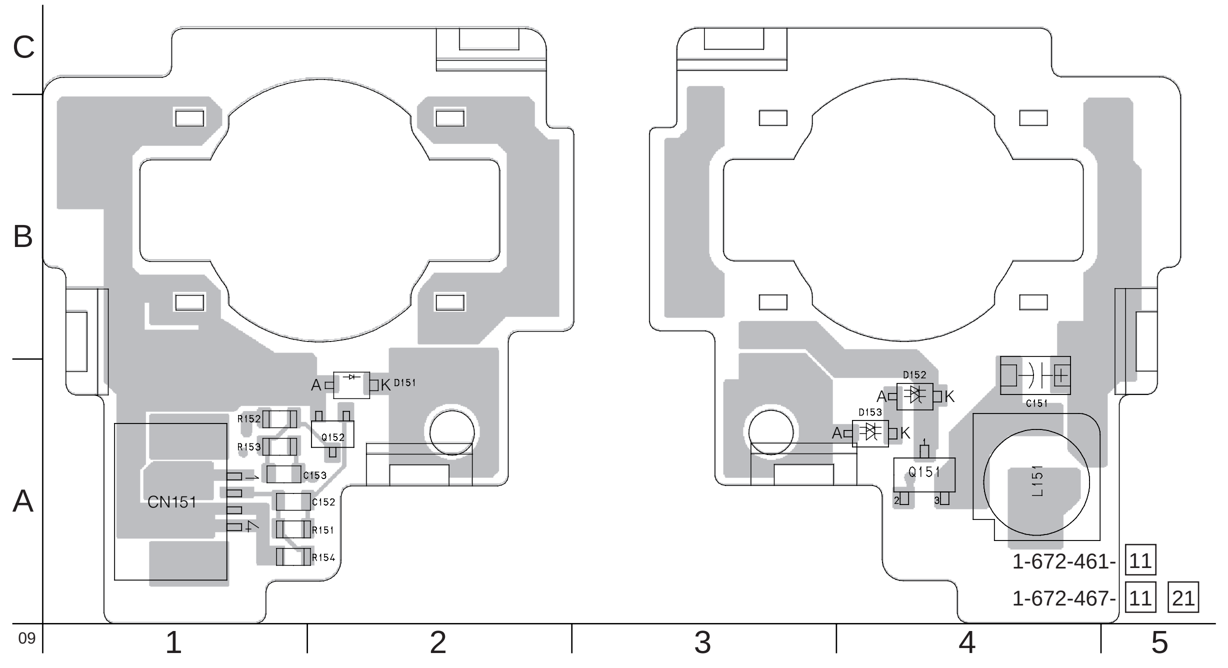


VL-21/22 (VIDEO LIGHT (VIDEO LIGHT MODEL)) PRINTED WIRING BOARD

– Ref No. VL-21 BOARD: 2,000 series, VL-22 BOARD: 3,000 series –

VL-21/22 BOARD (SIDE B)

VL-21/22 BOARD (SIDE A)

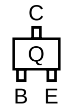

C
B
A
CN151
1-672-461- 11
1-672-467- 11 21
09
1
2
3
4
5

VL-21/22 BOARD	
C151	A-4
C152	A-1
C153	A-1
CN151	A-1
D151	A-2
D152	A-4
D153	A-4
L151	A-4
Q151	A-4
Q152	A-2

- **For Printed Wiring Boards.**

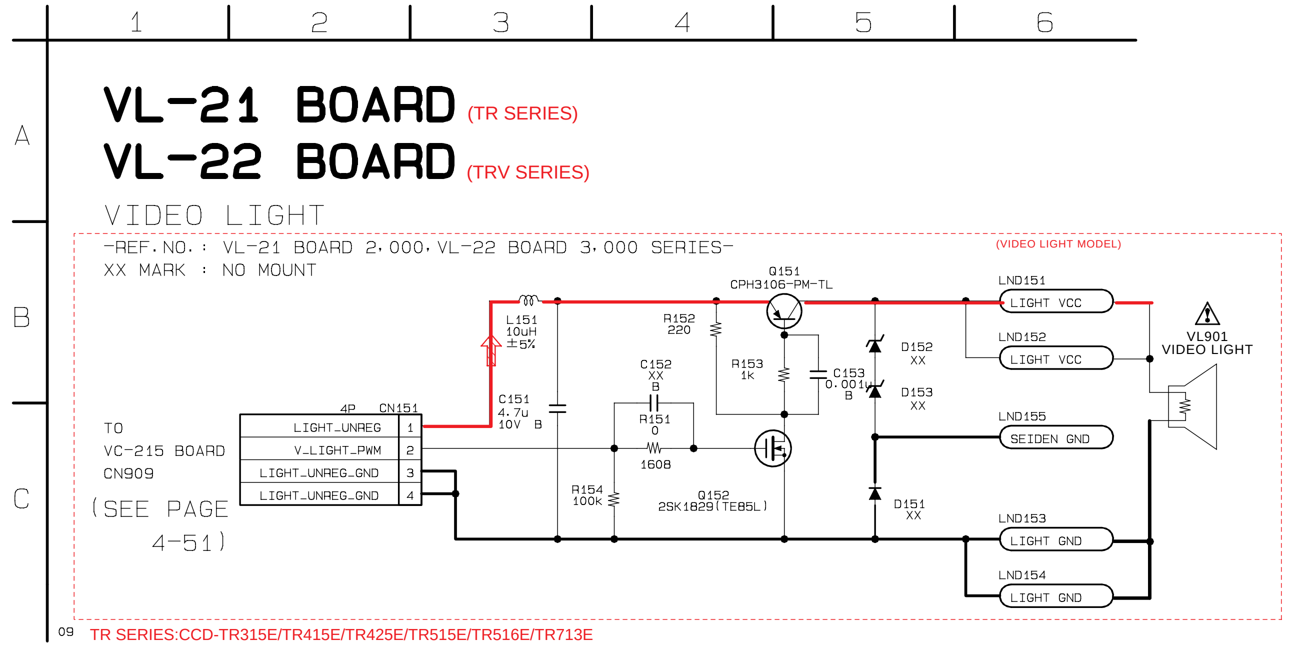
There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



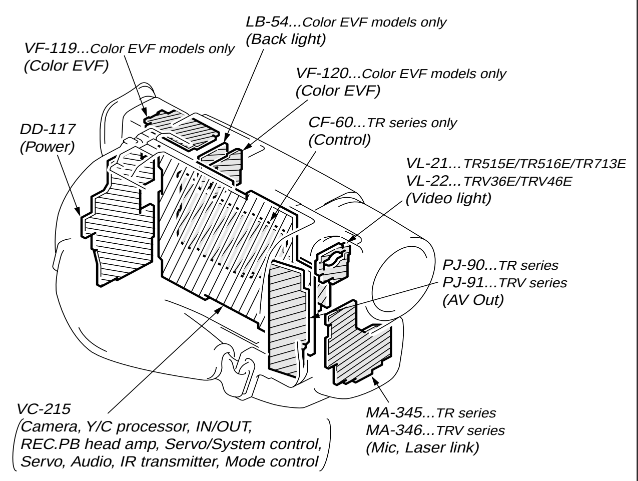
VL-21 BOARD (TR SERIES)
VL-22 BOARD (TRV SERIES)

VIDEO LIGHT

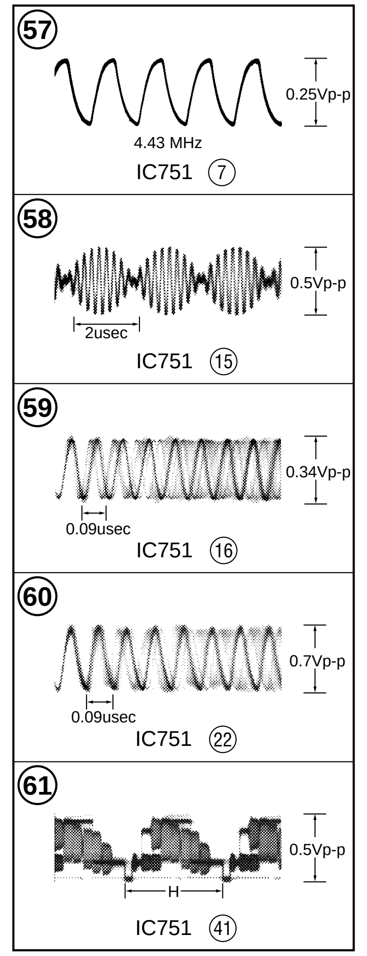

1
2
3
4
5
6
A
B
C
-REF. NO. : VL-21 BOARD 2,000, VL-22 BOARD 3,000 SERIES-
XX MARK : NO MOUNT
(VIDEO LIGHT MODEL)
Q151
CPH3106-PM-TL
L151
10uH
±5%
R152
220
R153
1k
C152
XX
B
R151
0
1608
C153
0.001u
B
D152
XX
D153
XX
D151
XX
C151
4.7u
10V B
R154
100k
Q152
2SK1829(TE85L)
4P CN151
LIGHT_UNREG 1
V_LIGHT_PWM 2
LIGHT_UNREG_GND 3
LIGHT_UNREG_GND 4
TO
VC-215 BOARD
CN909
(SEE PAGE
4-51)
LND151 LIGHT VCC
LND152 LIGHT VCC
LND155 SEIDEN GND
LND153 LIGHT GND
LND154 LIGHT GND
⚠
VL901
VIDEO LIGHT
09

TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.


LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

VC-215 BOARD (9/10)
PB

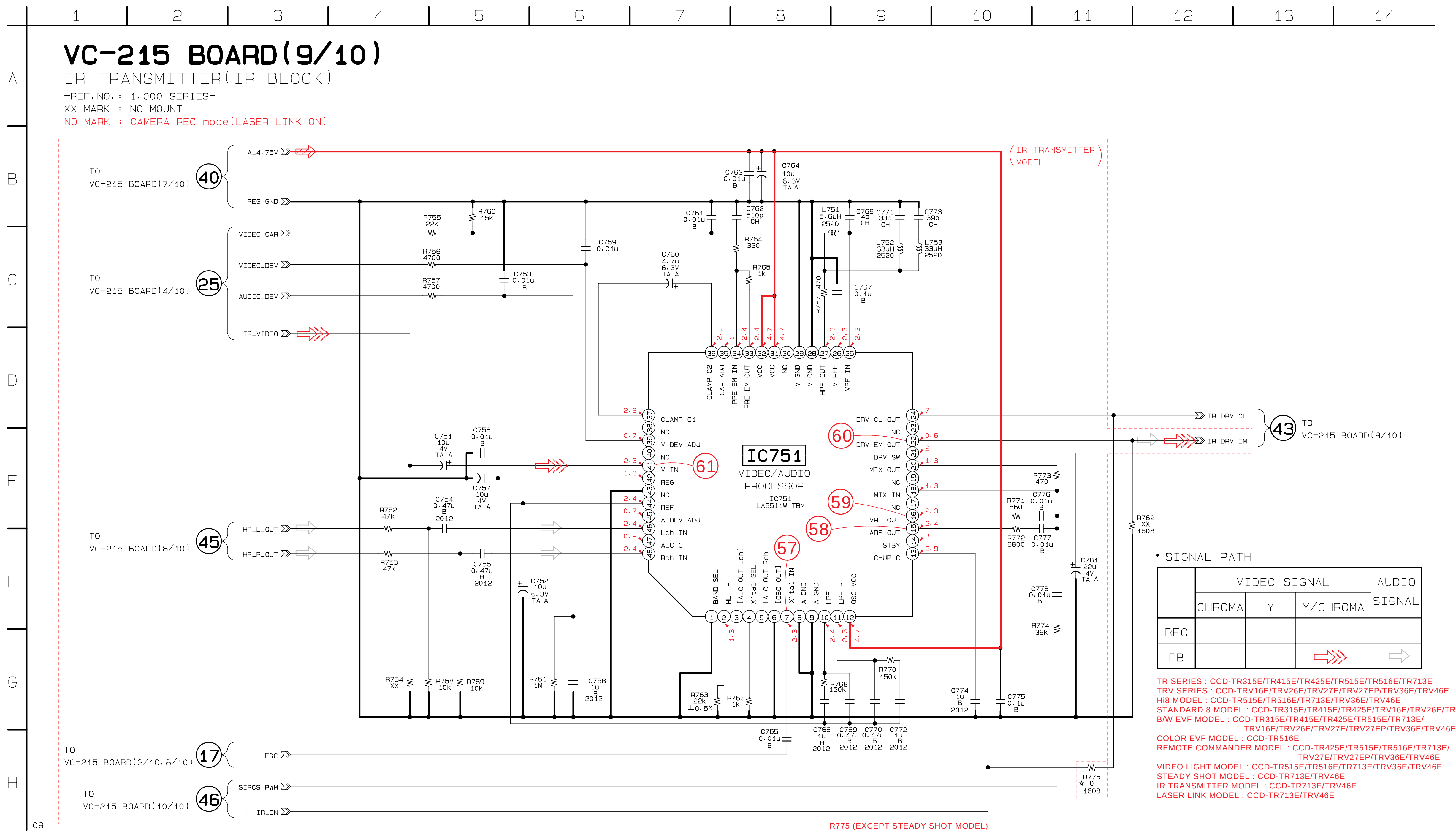


- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.

VC-215 BOARD(9/10)

IR TRANSMITTER(IR BLOCK)

-REF. NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode(LASER LINK ON)

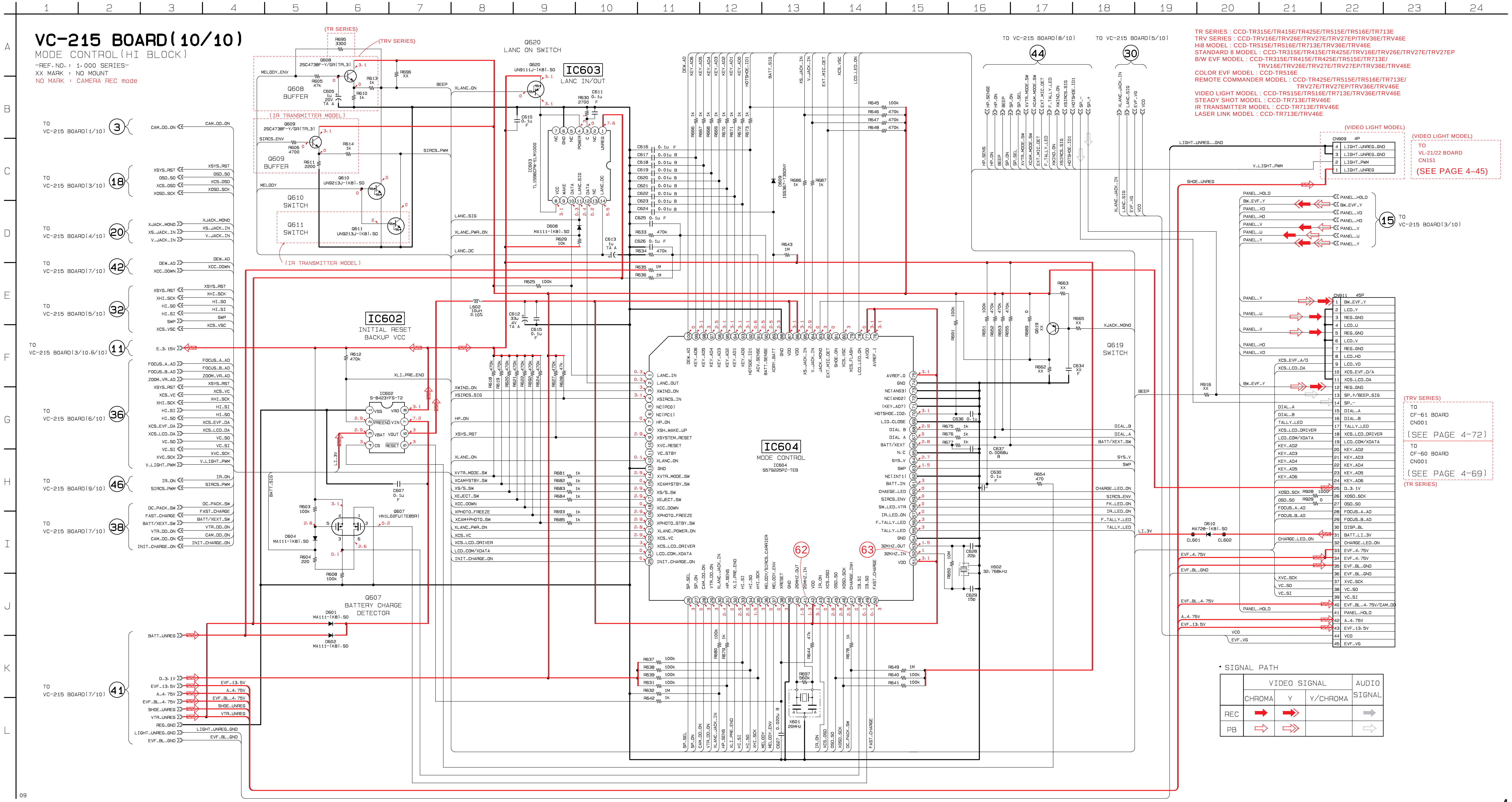

1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
(IR TRANSMITTER MODEL)
TO
VC-215 BOARD(7/10)
40
A_4.75V
REG_GND
TO
VC-215 BOARD(4/10)
25
VIDEO_CAR
VIDEO_DEV
AUDIO_DEV
IR_VIDEO
TO
VC-215 BOARD(8/10)
45
HP_L_OUT
HP_R_OUT
TO
VC-215 BOARD(3/10,8/10)
17
FSC
TO
VC-215 BOARD(10/10)
46
SIRCS_PWM
IR_ON
IC751
VIDEO/AUDIO
PROCESSOR
IC751
LA9511W-TBM
CLAMP C1
V DEV ADJ
V IN
REG
REF
A DEV ADJ
Lch IN
ALC C
Rch IN
DRV CL OUT
DRV EM OUT
DRV SW
MIX OUT
MIX IN
VRF OUT
ARF OUT
STBY
CHUP C
IR_DRV_CL
IR_DRV_EM
TO
VC-215 BOARD(8/10)
43
57
58
59
60
61
C763 0.01u B
C764 10u 6.3V TA A
C761 0.01u B
C762 510p CH
R755 22k
R760 15k
R756 4700
R757 4700
R764 330
R765 1k
L751 5.6uH
L752 33uH
L753 33uH
C759 0.01u B
C760 4.7u 6.3V TA A
C767 0.1u B
C751 10u 4V TA A
C756 0.01u B
C754 0.47u B
C757 10u 4V TA A
C755 0.47u B
C752 10u 6.3V TA A
R752 47k
R753 47k
R754 XX
R758 10k
R759 10k
R761 1k
C758 1u
R763 22k
R766 1k
R768 150k
R770 150k
C765 0.01u B
C774 1u B
C775 0.1u B
R771 560
R772 6800
R773 470
R774 39k
C776 0.01u B
C777 0.01u B
C778 0.01u B
C781 22u 4V TA A
R762 XX 1608
R775 ☆ 0 1608
R775 (EXCEPT STEADY SHOT MODEL)
09

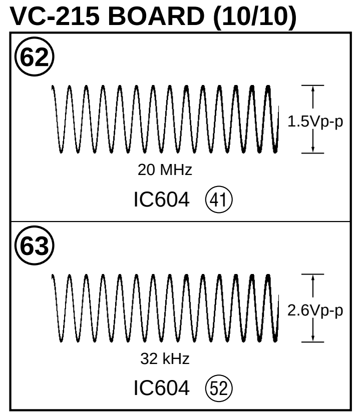
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⟫	⇨

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E

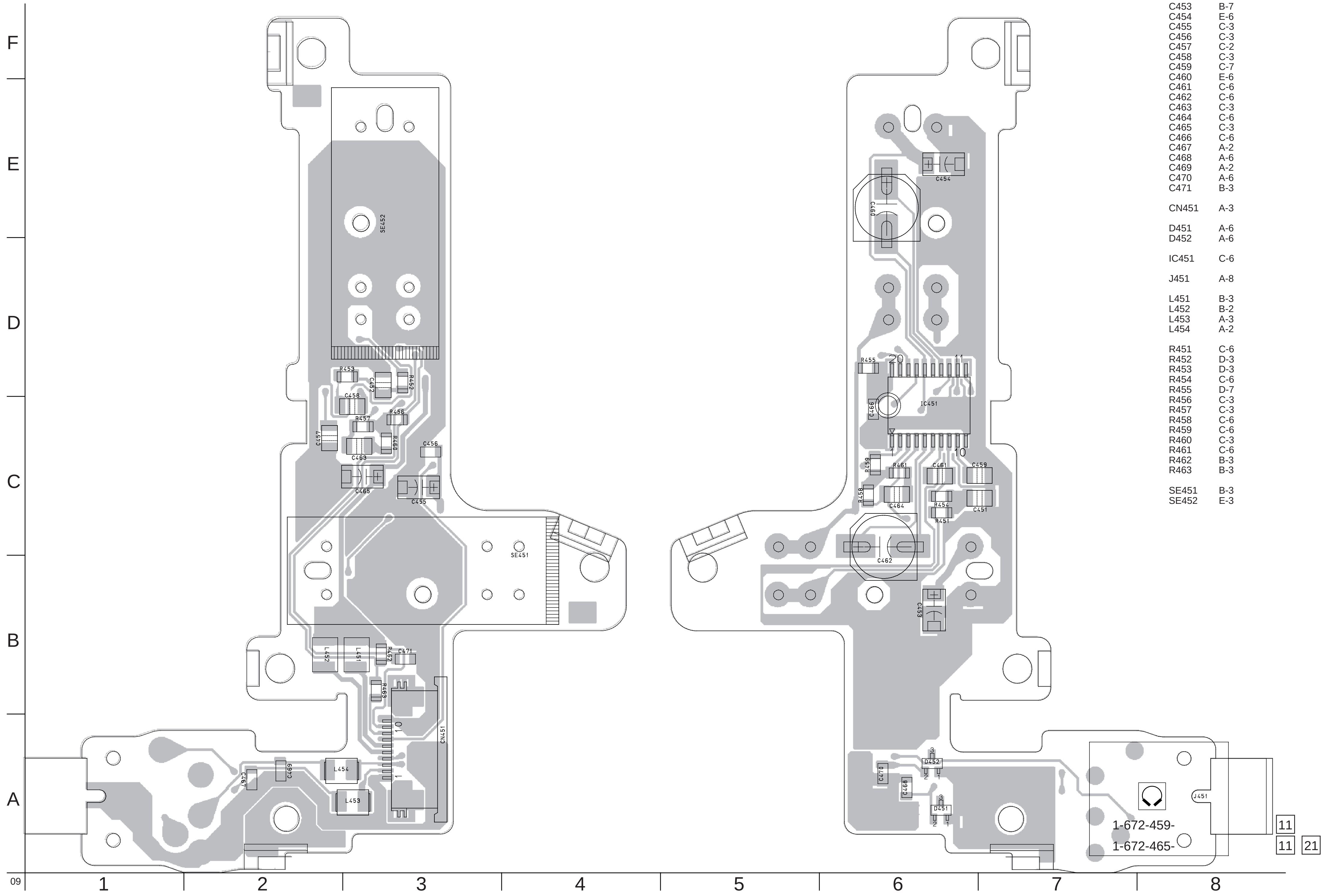
- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.


VC-215 BOARD(10/10)
MODE CONTROL(HI BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
Hi8 MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STANDARD 8 MODEL : CCD-TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP
B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
COLOR EVF MODEL : CCD-TR516E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E
VIDEO LIGHT MODEL : CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E
STEADY SHOT MODEL : CCD-TR713E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E
IC602 INITIAL RESET BACKUP VCC
IC603 LANC IN/OUT
IC604 MODE CONTROL
Q608 BUFFER
Q609 BUFFER
Q610 SWITCH
Q611 SWITCH
Q607 BATTERY CHARGE DETECTOR
Q620 LANC ON SWITCH
Q619 SWITCH
(TR SERIES)
(TRV SERIES)
(IR TRANSMITTER MODEL)
(VIDEO LIGHT MODEL)
TO VL-21/22 BOARD CN151 (SEE PAGE 4-45)
TO CF-61 BOARD CN001 (SEE PAGE 4-72)
TO CF-60 BOARD CN001 (SEE PAGE 4-69)
TO VC-215 BOARD(1/10) 3
TO VC-215 BOARD(3/10) 18
TO VC-215 BOARD(4/10) 20
TO VC-215 BOARD(7/10) 42
TO VC-215 BOARD(5/10) 32
TO VC-215 BOARD(3/10,6/10) 11
TO VC-215 BOARD(6/10) 36
TO VC-215 BOARD(9/10) 46
TO VC-215 BOARD(7/10) 38
TO VC-215 BOARD(7/10) 41
TO VC-215 BOARD(8/10) 44
TO VC-215 BOARD(5/10) 30
TO VC-215 BOARD(3/10) 15
X601 20MHz
X602 32.768kHz
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB


VC-215 BOARD (10/10)
62
1.5Vp-p
20 MHz
IC604 (41)
63
2.6Vp-p
32 kHz
IC604 (52)

SE-80/81 (STEADY SHOT (STEADY SHOT MODEL)) PRINTED WIRING BOARD

– Ref No. SE-80 BOARD: 4,000 series, SE-81 BOARD: 9,000 series –



SE-80/81 BOARD (SIDE B)

SE-80/81 BOARD (SIDE A)

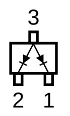
F
E
D
C
B
A
1
2
3
4
5
6
7
8
09
1-672-459-
1-672-465-
11
11
21

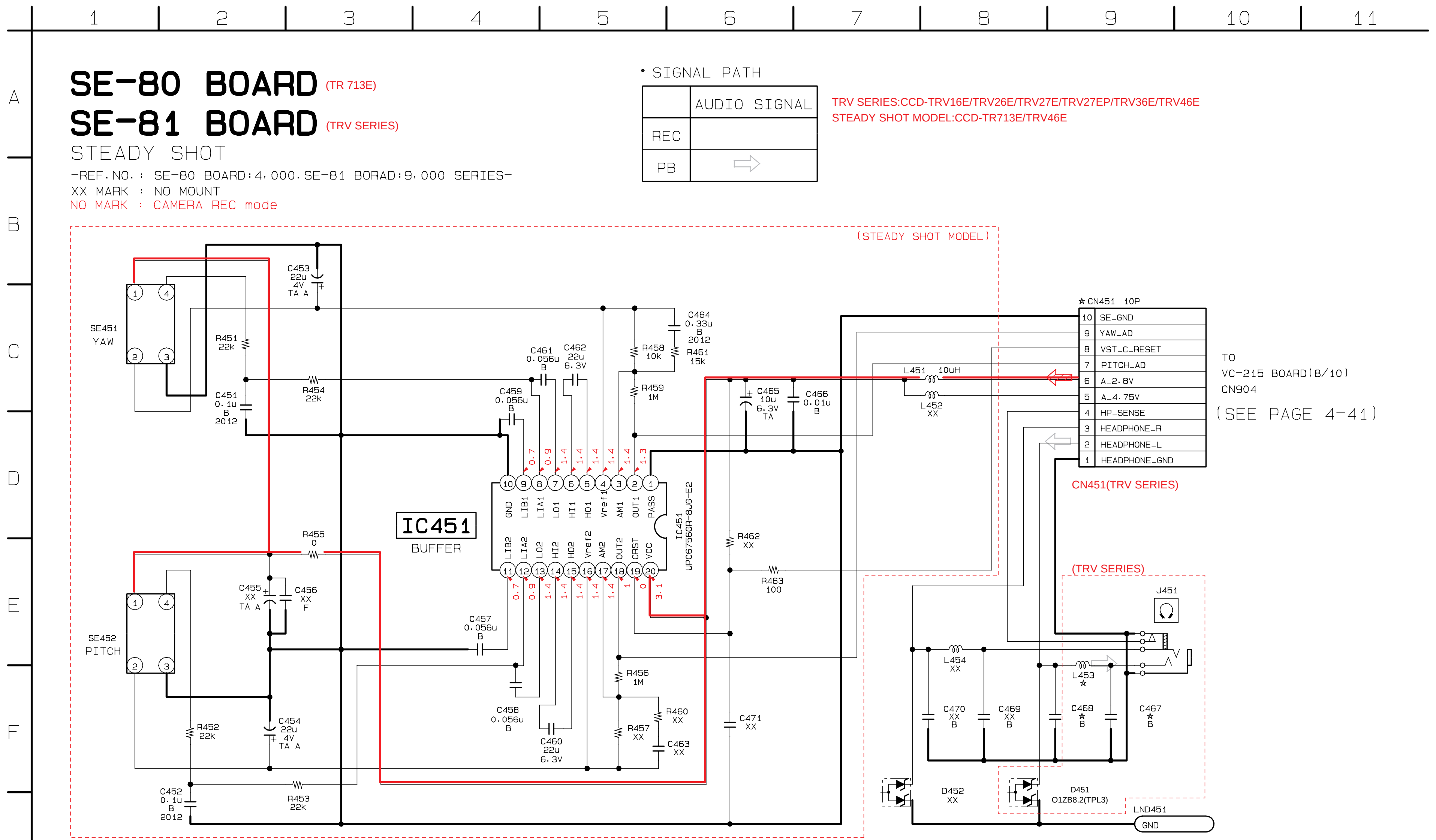
SE-80 SE-81BOARD	
C451	C-7
C452	D-3
C453	B-7
C454	E-6
C455	C-3
C456	C-3
C457	C-2
C458	C-3
C459	C-7
C460	E-6
C461	C-6
C462	C-6
C463	C-3
C464	C-6
C465	C-3
C466	C-6
C467	A-2
C468	A-6
C469	A-2
C470	A-6
C471	B-3
CN451	A-3
D451	A-6
D452	A-6
IC451	C-6
J451	A-8
L451	B-3
L452	B-2
L453	A-3
L454	A-2
R451	C-6
R452	D-3
R453	D-3
R454	C-6
R455	D-7
R456	C-3
R457	C-3
R458	C-6
R459	C-6
R460	C-3
R461	C-6
R462	B-3
R463	B-3
SE451	B-3
SE452	E-3

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

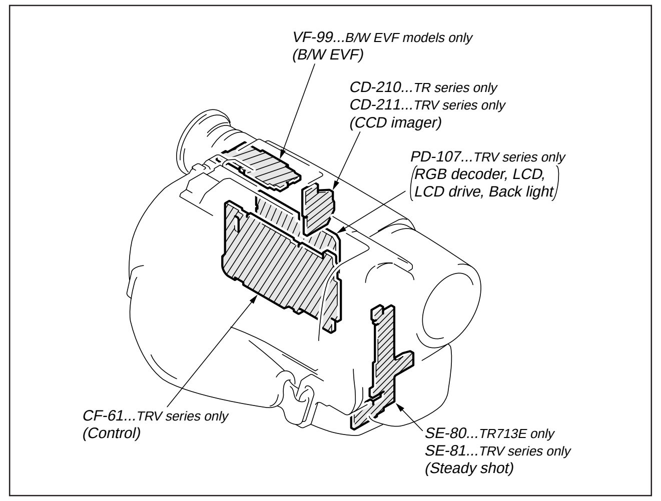
- Chip diode




SE-80 BOARD (TR 713E)
SE-81 BOARD (TRV SERIES)
STEADY SHOT
-REF.NO. : SE-80 BOARD:4,000.SE-81 BORAD:9,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
• SIGNAL PATH
AUDIO SIGNAL
REC
PB
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
STEADY SHOT MODEL:CCD-TR713E/TRV46E
(STEADY SHOT MODEL)
SE451 YAW
SE452 PITCH
IC451
BUFFER
IC451 UPC6756GR-8JG-E2
CN451 10P
SE_GND
YAW_AD
VST_C_RESET
PITCH_AD
A_2.8V
A_4.75V
HP_SENSE
HEADPHONE_R
HEADPHONE_L
HEADPHONE_GND
TO VC-215 BOARD(8/10) CN904
(SEE PAGE 4-41)
CN451(TRV SERIES)
(TRV SERIES)
J451
D451 01ZB8.2(TPL3)
D452
LND451
GND
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
09

☆MARKED:MOUNT TABLE(IMMUNITY H-PHONE)

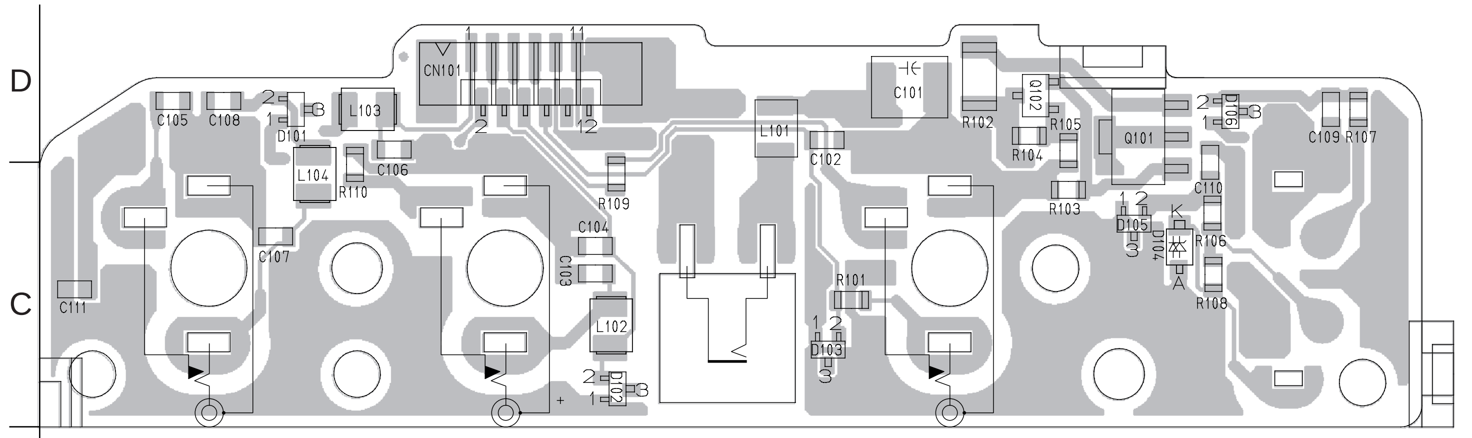
TRV46E	A-7073-803-A (AEP,UK,EE,NE,RU) SE81(VMM CE)MOUNT	A-7073-810-A (E,HK,AUS,CN) SE81(VMM)MOUNT
C467	0.001u	XX
C468	0.001u	XX
L453	100uH	0uH


VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
(RGB decoder, LCD, LCD drive, Back light)
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)

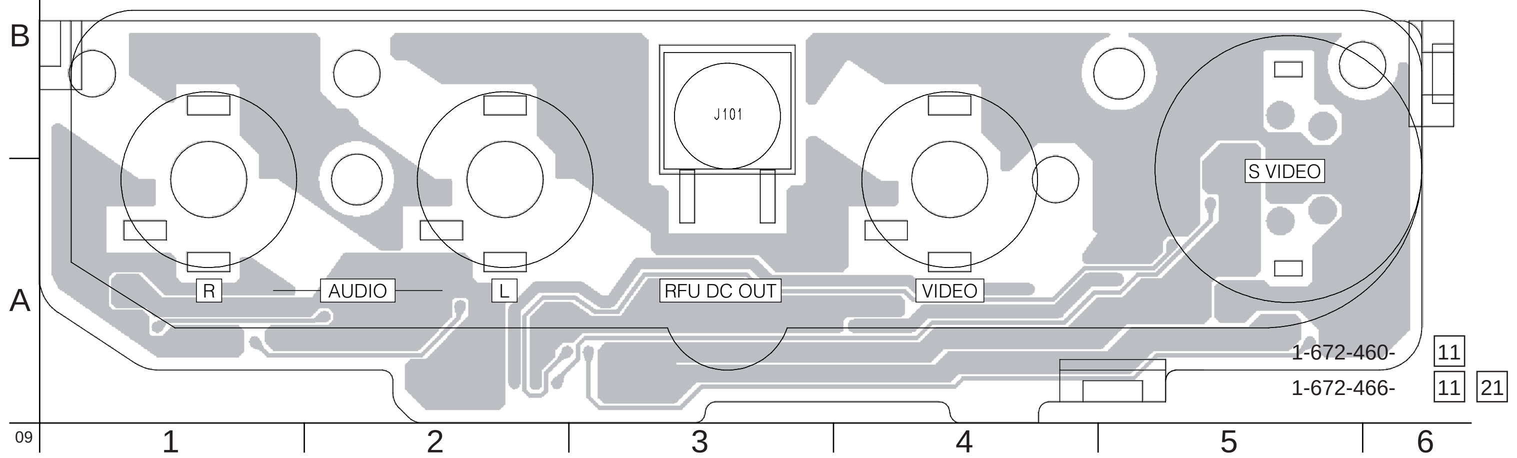
PJ-90/91 (AV OUT) PRINTED WIRING BOARD

– Ref No. PJ-90 BOARD: 4,000 series, PJ-91 BOARD: 9,000 series –

PJ-90/91 BOARD (SIDE B)


D
C
CN101
1
11
C105
C108
D101
L103
C106
L104
R110
C107
C111
R109
C104
C103
L102
D103
L101
C102
C101
Q102
R102
R105
R104
Q101
R103
D105
D104
R106
R108
C110
D106
C109
R107
R101
D102

PJ-90/91 BOARD (SIDE A)

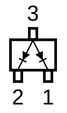

B
A
J101
S VIDEO
R
AUDIO
L
RFU DC OUT
VIDEO
1-672-460- 11
1-672-466- 11 21
09
1
2
3
4
5
6

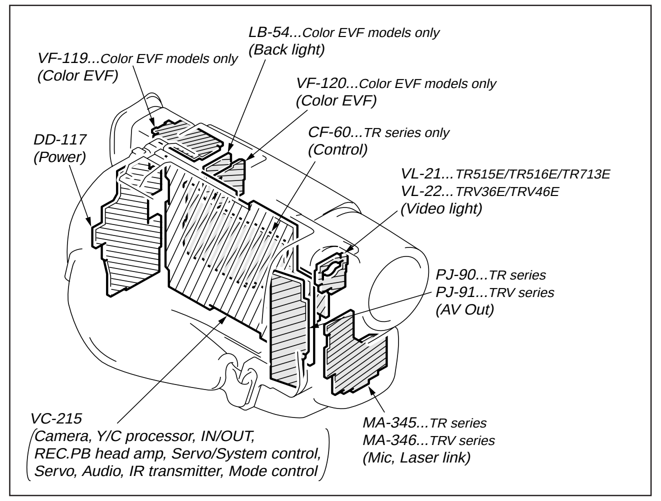
PJ-90/91 BOARD	
C101	D-4
C102	D-3
C103	C-3
C104	C-3
C105	D-1
C106	D-2
C107	C-1
C108	D-1
C109	D-5
C110	C-5
C111	C-1
CN101	D-2
D101	D-1
D102	C-3
D103	C-3
D104	C-5
D105	C-5
D106	D-5
J101	B-3
L101	D-3
L102	C-3
L103	D-2
L104	C-2
Q101	D-5
Q102	D-4
R101	C-4
R102	D-4
R103	C-4
R104	D-4
R105	D-4
R106	C-5
R107	D-5
R108	C-5
R109	C-3
R110	C-2

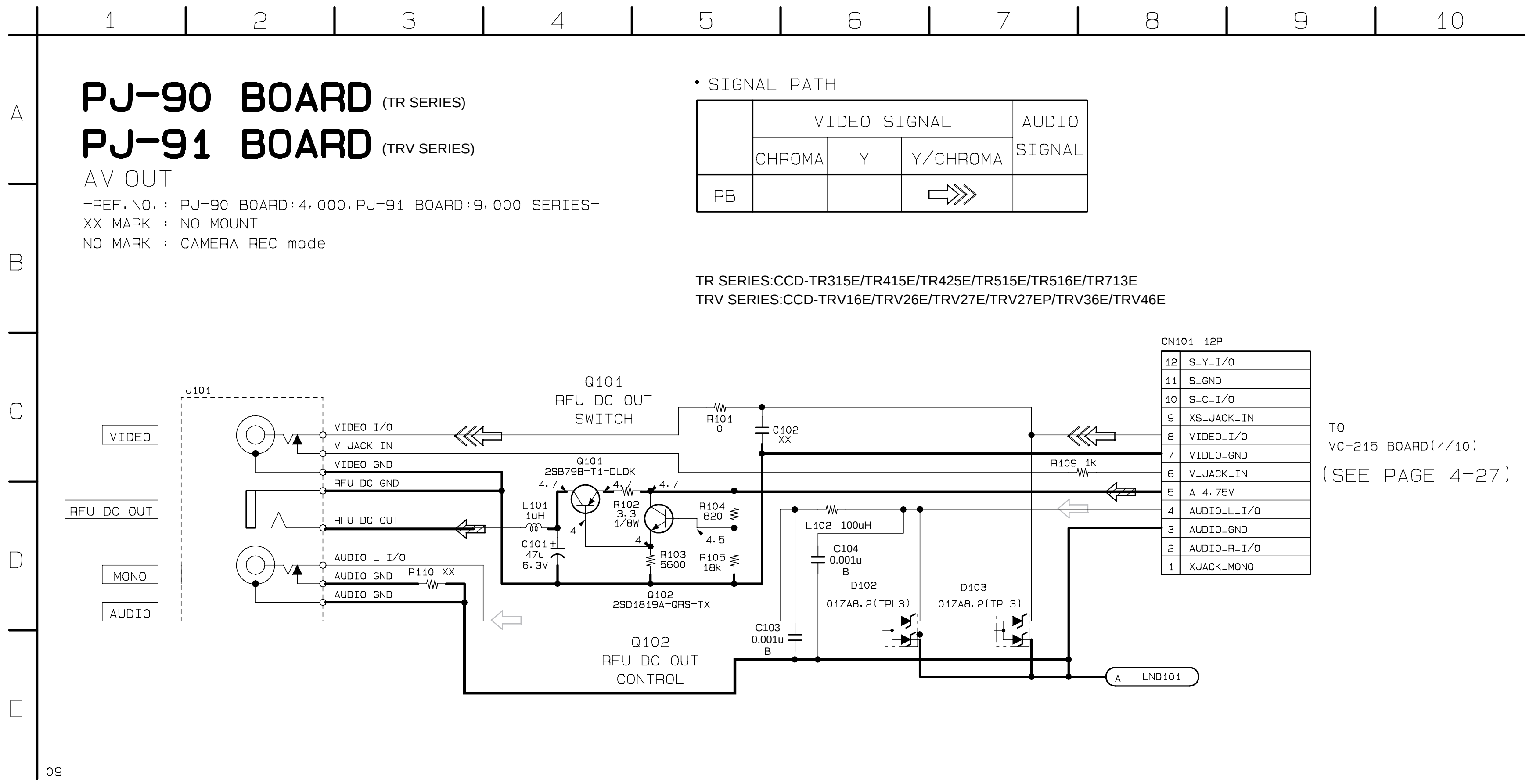
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip diode




LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)



PJ-90 BOARD (TR SERIES)
PJ-91 BOARD (TRV SERIES)
AV OUT
-REF.NO.: PJ-90 BOARD:4,000.PJ-91 BOARD:9,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

• SIGNAL PATH

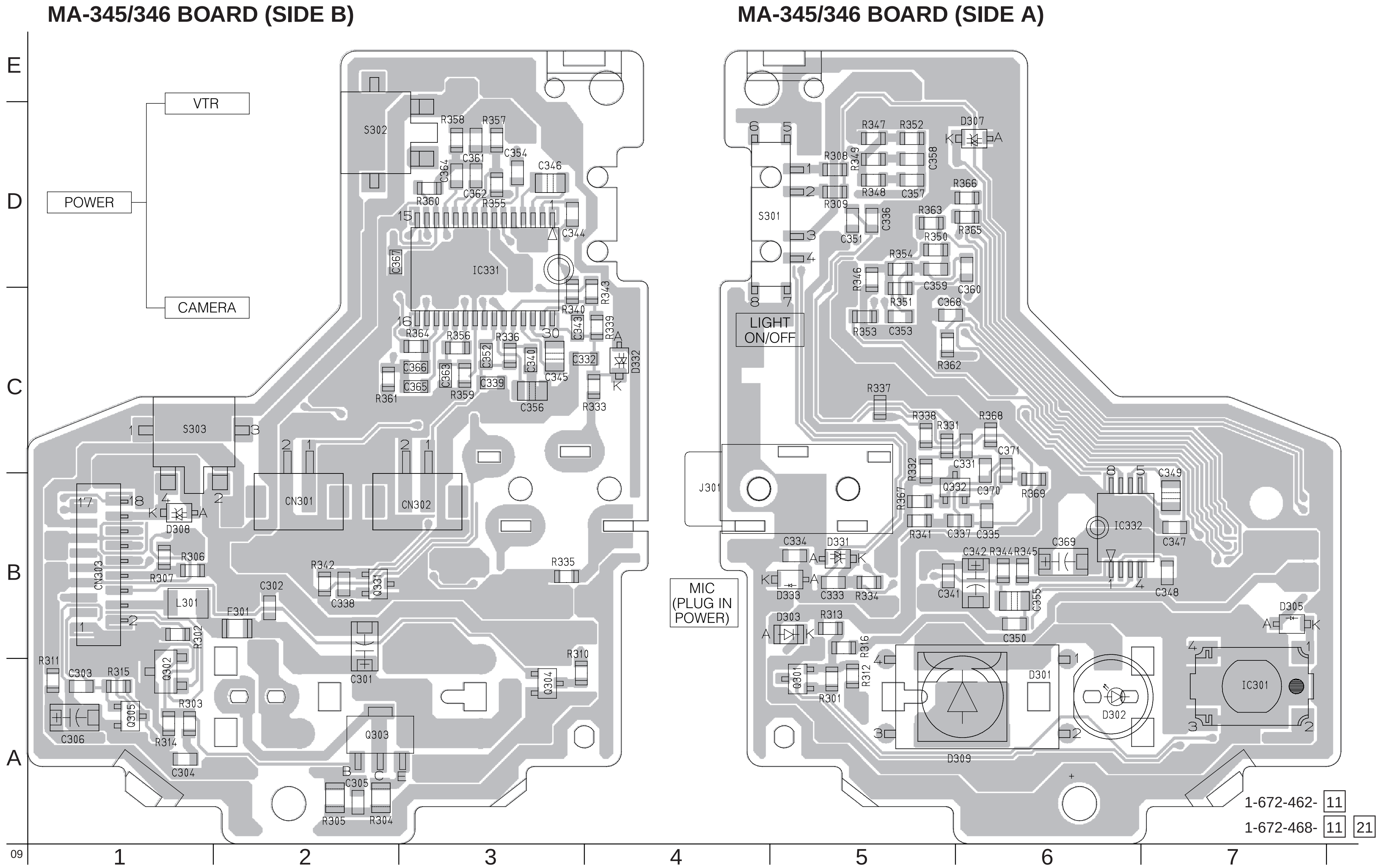
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB			⇨》	

TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
J101
VIDEO
RFU DC OUT
MONO
AUDIO
VIDEO I/O
V JACK IN
VIDEO GND
RFU DC GND
RFU DC OUT
AUDIO L I/O
AUDIO GND
AUDIO GND
R110 XX
Q101
RFU DC OUT
SWITCH
Q101
2SB798-T1-DLDK
4.7
4.7
4.7
4
4
4.5
L101
1uH
C101
47u
6.3V
R102
3.3
1/8W
R103
5600
R104
820
R105
18k
Q102
2SD1819A-QRS-TX
Q102
RFU DC OUT
CONTROL
R101
0
C102
XX
R109 1k
L102 100uH
C104
0.001u
B
C103
0.001u
B
D102
01ZA8.2(TPL3)
D103
01ZA8.2(TPL3)
A LND101
CN101 12P
12 S_Y_I/O
11 S_GND
10 S_C_I/O
9 XS_JACK_IN
8 VIDEO_I/O
7 VIDEO_GND
6 V_JACK_IN
5 A_4.75V
4 AUDIO_L_I/O
3 AUDIO_GND
2 AUDIO_R_I/O
1 XJACK_MONO
TO
VC-215 BOARD(4/10)
(SEE PAGE 4-27)
09

MA-345, 346 (MIC, LASER LINK) PRINTED WIRING BOARD

– Ref No. MA-345 BOARD: 9,000 series, MA-346 BOARD: 9,000 series –



MA-345/346 BOARD (SIDE B)

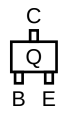
MA-345/346 BOARD (SIDE A)

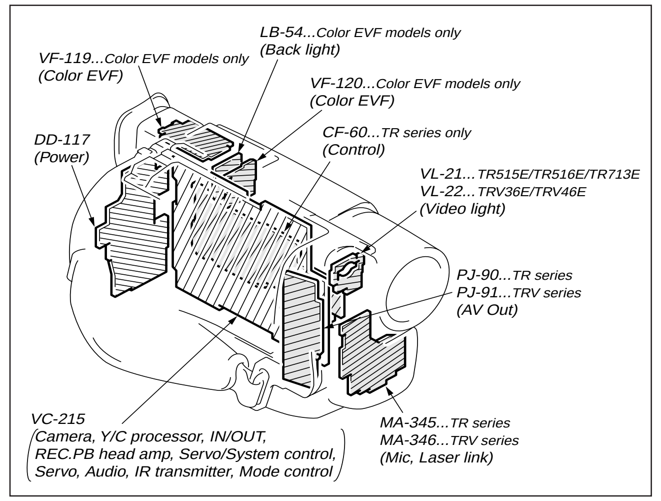
E
D
C
B
A
09
1
2
3
4
5
6
7
VTR
POWER
CAMERA
S302
S303
S301
IC331
IC332
IC301
CN301
CN302
CN303
J301
Q303
D301
D302
D309
LIGHT ON/OFF
MIC (PLUG IN POWER)
1-672-462- 11
1-672-468- 11 21

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor





LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
CF-60...TR series only
(Control)
DD-117
(Power)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

MA-345/346 BOARD

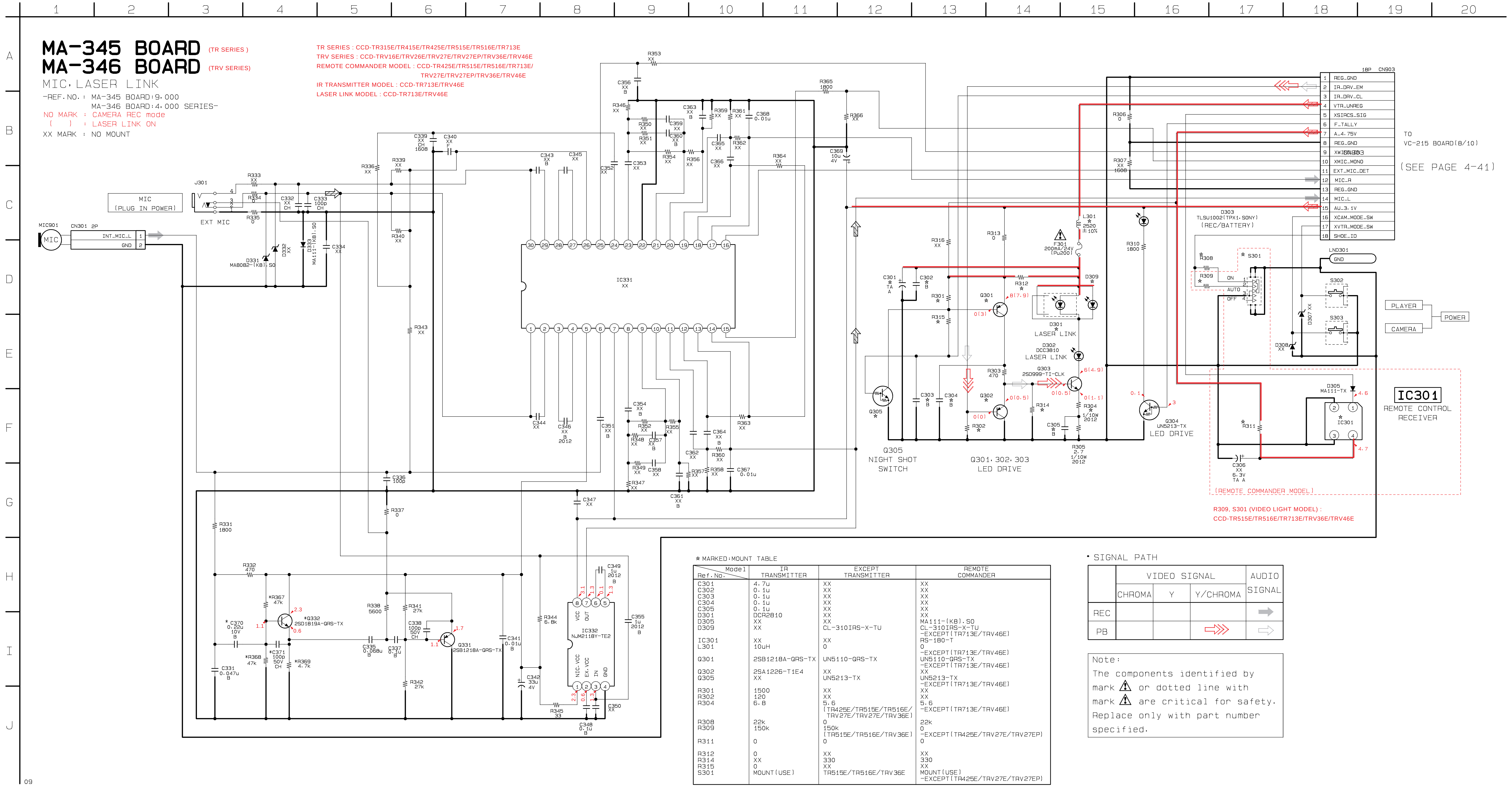
C801	E-3
C301	B-2
C302	B-2
C303	A-1
C304	A-1
C305	A-2
C306	A-1
C318	B-7
C331	C-6
C332	C-4
C333	B-5
C334	B-5
C335	B-6
C336	D-5
C337	B-6
C338	B-2
C339	C-3
C340	C-3
C341	B-5
C342	B-6
C343	C-3
C344	D-3
C345	C-3
C346	D-3
C347	B-7
C349	B-7
C350	B-6
C351	D-5
C352	C-3
C353	C-5
C354	D-3
C355	B-6
C356	C-3
C357	D-5
C358	D-5
C359	D-5
C360	D-6
C361	D-3
C362	D-3
C363	C-3
C364	D-3
C365	C-3
C366	C-3
C367	D-2
C368	C-5
C369	B-6
C370	C-6
C371	C-6
CN301	B-2
CN302	B-3
CN303	B-1
D301	A-6
D302	A-6
D303	B-5
D305	B-7
D307	D-6
D308	B-1
D309	A-6
D331	B-5
D332	C-4
D333	B-5
F301	B-2
IC301	A-7
IC331	D-3
IC332	B-6
J301	B-4
L301	B-1
Q301	A-5
Q302	A-1
Q303	A-2
Q304	A-3
Q305	A-1
Q331	B-2
Q332	B-5
R301	A-5
R302	B-1
R303	A-1
R304	A-2
R305	A-2
R306	B-1
R307	B-1
R308	D-5
R309	D-5
R310	A-3
R311	A-1
R312	A-5
R313	B-5
R314	A-1
R315	A-1
R316	B-5
R331	C-5
R332	C-5
R333	C-4
R334	B-5
R335	B-3
R336	C-3
R337	C-5
R338	C-5
R339	C-4
R340	C-3
R341	B-5
R342	B-2
R343	C-4
R344	B-6
R345	B-6
R346	D-5
R347	D-5
R348	D-5
R349	D-5
R350	D-5
R351	C-5
R352	D-5
R353	C-5
R354	D-5
R355	D-3
R356	C-3
R357	D-3
R358	D-3
R359	C-3
R360	D-3
R361	C-2
R362	C-5
R363	D-5
R364	C-3
R365	D-6
R366	D-6
R367	B-5
R368	C-6
R369	B-6
S301	D-4
S302	D-2
S303	C-1

MA-345 BOARD (TR SERIES)
MA-346 BOARD (TRV SERIES)

MIC, LASER LINK

-REF. NO. : MA-345 BOARD : 9,000
MA-346 BOARD : 4,000 SERIES-
NO MARK : CAMERA REC mode
( ) : LASER LINK ON
XX MARK : NO MOUNT

TR SERIES : CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
REMOTE COMMANDER MODEL : CCD-TR425E/TR515E/TR516E/TR713E/
TRV27E/TRV27EP/TRV36E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
LASER LINK MODEL : CCD-TR713E/TRV46E


1
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5
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7
8
9
10
11
12
13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
MIC901
MIC
CH301 2P
INT_MIC_L
GND
MIC
(PLUG IN POWER)
J301
EXT MIC
D331
MA8082-(K8).SO
IC331
IC332
NJM2118V-TE2
Q331
2SB1218A-QRS-TX
Q332
2SD1819A-QRS-TX
18P CN903
1 REG_GND
2 IR_DRV_EM
3 IR_DRV_CL
4 VTR_UNREG
5 XSIRCS_SIG
6 F_TALLY
7 A_4.75V
8 REG_GND
9 XWINDING
10 XMIC_MONO
11 EXT_MIC_DET
12 MIC_R
13 REG_GND
14 MIC_L
15 AU_3.1V
16 XCAM_MODE_SW
17 XVTR_MODE_SW
18 SHOE_ID
TO
VC-215 BOARD(8/10)
(SEE PAGE 4-41)
LND301
GND
S302
S303
PLAYER
CAMERA
POWER
D303
TLSU1002(TPX1-SONY)
(REC/BATTERY)
S301
ON
AUTO
OFF
F301
200mA/24V
(PL200)
L301
D301
LASER LINK
D302
DCC3810
LASER LINK
Q303
2SD999-T1-CLK
Q304
UN5213-TX
LED DRIVE
Q305
NIGHT SHOT
SWITCH
Q301, 302, 303
LED DRIVE
D305
MA111-TX
IC301
REMOTE CONTROL
RECEIVER
(REMOTE COMMANDER MODEL)
09

R309, S301 (VIDEO LIGHT MODEL) :
CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E

☆ MARKED : MOUNT TABLE

Model / Ref. No.	IR TRANSMITTER	EXCEPT TRANSMITTER	REMOTE COMMANDER
C301	4.7u	XX	XX
C302	0.1u	XX	XX
C303	0.1u	XX	XX
C304	0.1u	XX	XX
C305	0.1u	XX	XX
D301	DCR2810	XX	XX
D305	XX	XX	MA111-(K8).SO
D309	XX	CL-310IRS-X-TU	CL-310IRS-X-TU -EXCEPT(TR713E/TRV46E)
IC301	XX	XX	RS-180-T
L301	10uH	0	0 -EXCEPT(TR713E/TRV46E)
Q301	2SB1218A-QRS-TX	UN5110-QRS-TX	UN5110-QRS-TX -EXCEPT(TR713E/TRV46E)
Q302	2SA1226-T1E4	XX	XX
Q305	XX	UN5213-TX	UN5213-TX -EXCEPT(TR713E/TRV46E)
R301	1500	XX	XX
R302	120	XX	XX
R304	6.8	5.6 (TR425E/TR515E/TR516E/ TRV27E/TRV27E/TRV36E)	5.6 -EXCEPT(TR713E/TRV46E)
R308	22k	0	22k
R309	150k	150k (TR515E/TR516E/TRV36E)	0 -EXCEPT(TR425E/TRV27E/TRV27EP)
R311	0	0	0
R312	0	XX	XX
R314	XX	330	330
R315	0	XX	XX
S301	MOUNT(USE)	TR515E/TR516E/TRV36E	MOUNT(USE) -EXCEPT(TR425E/TRV27E/TRV27EP)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨	⇨

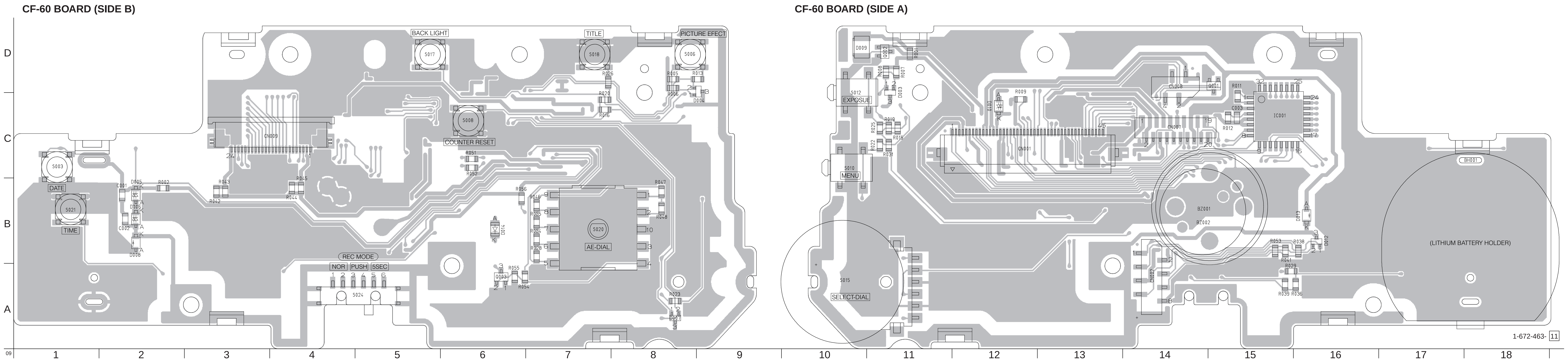
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

CF-60 (CONTROL (TR Series)) PRINTED WIRING BOARD

– Ref No. CF-60 BOARD: 4,000 series –

CF-61 BOARD

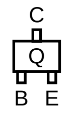
BH001	B-9
C001	B-6
C002	A-6
CN001	C-4
CN002	A-5
CN005	C-7
CN006	B-7
CN007	C-5
CN009	B-6
CN010	A-3
D004	A-13
D005	B-7
D006	A-7
D007	A-14
D008	A-6
D009	B-1
D010	C-3
D012	A-4
Q002	C-1
R001	B-1
R002	B-6
R005	A-13
R007	C-1
R013	A-13
R022	B-13
R023	B-14
R029	C-2
R031	B-4
R032	C-11
R036	C-2
R038	B-4
R039	C-2
R041	A-4
R051	C-5
R052	C-5
R053	A-4
R054	A-12
S006	A-13
S010	B-14
S015	A-15
S022	C-11


CF-60 BOARD (SIDE B)
CF-60 BOARD (SIDE A)
D
C
B
A
09
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
BACK LIGHT
TITLE
PICTURE EFECT
S017
S018
S006
S008
COUNTER RESET
CN009
S003
DATE
S021
TIME
REC MODE
NOR
PUSH
5SEC
S024
S020
AE-DIAL
EXPOSUE
MENU
S012
S010
S015
SELECT-DIAL
CN001
IC001
BZ001
BZ002
BH001
(LITHIUM BATTERY HOLDER)
1-672-463-
11

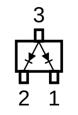
- **For Printed Wiring Boards.**

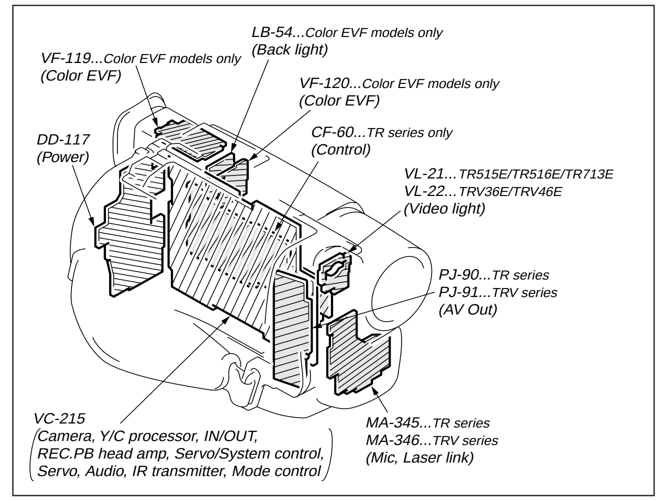
There are few cases that the part isn't mounted in this model is printed on this diagram.

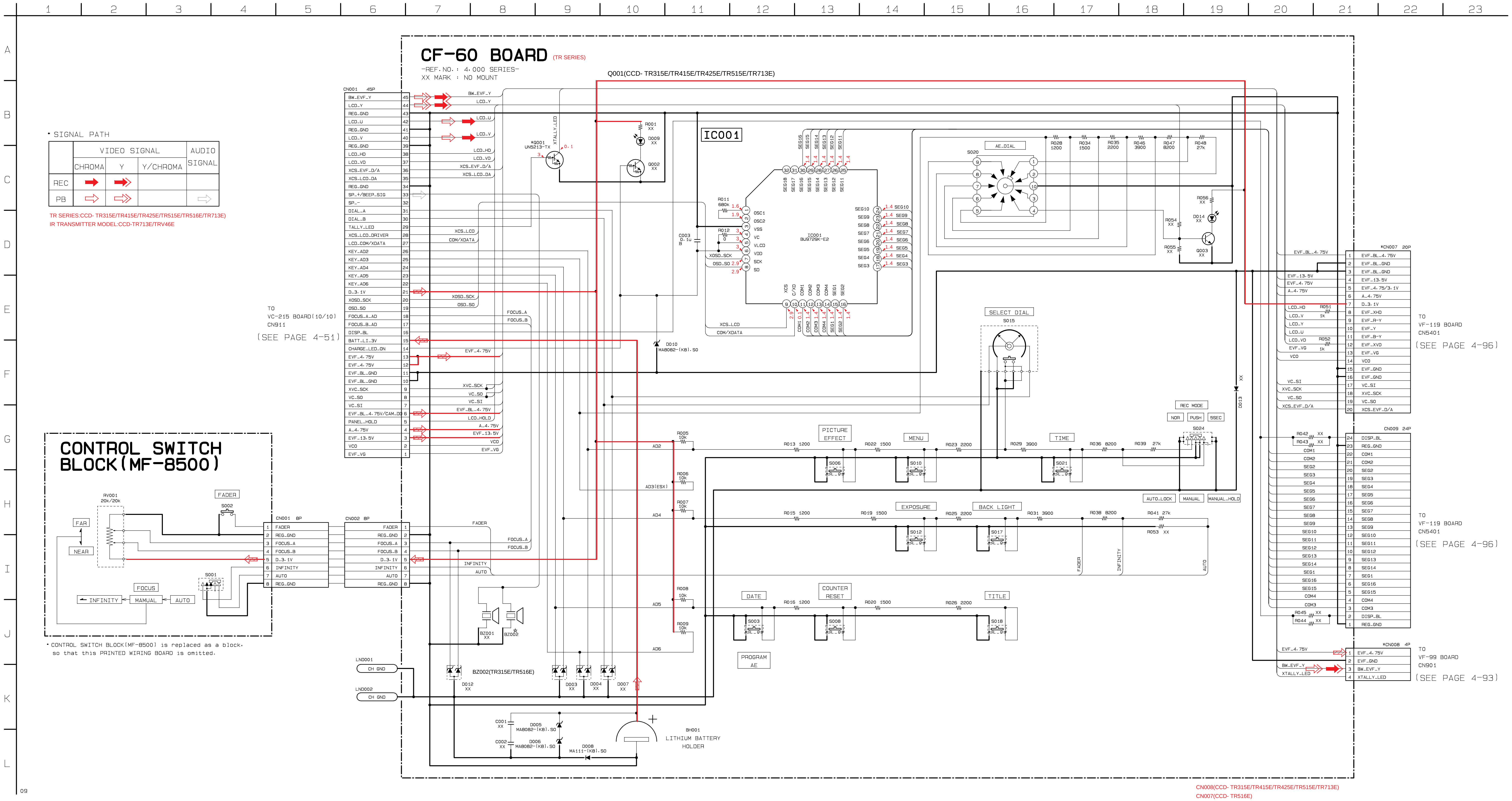
- Chip transistor



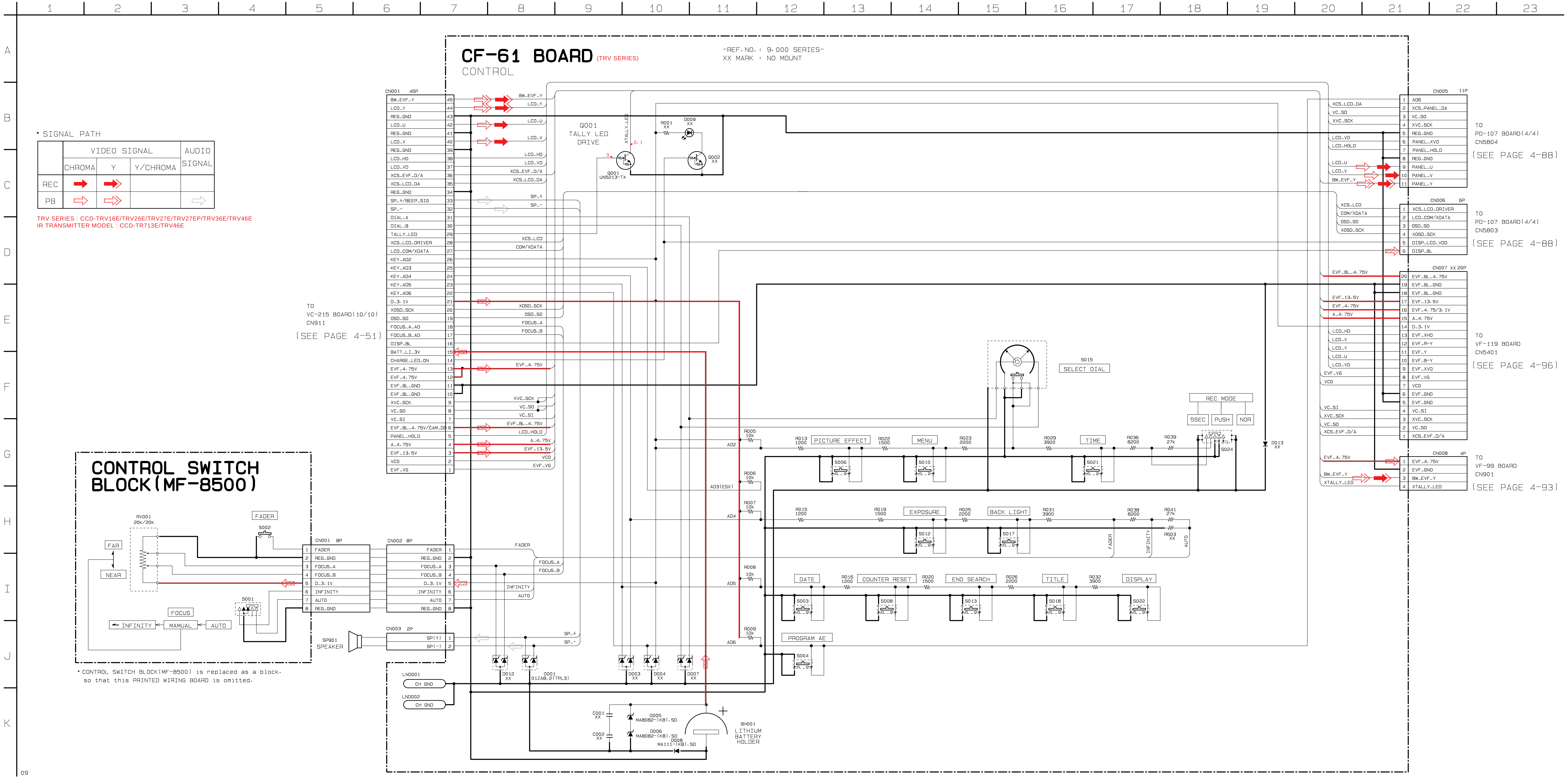
Chip diode




VF-119...Color EVF models only
(Color EVF)
LB-54...Color EVF models only
(Back light)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT, REC.PB head amp, Servo/System control, Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)


CF-60 BOARD (TR SERIES)
-REF.NO.: 4,000 SERIES-
XX MARK : NO MOUNT
Q001(CCD- TR315E/TR415E/TR425E/TR515E/TR713E)
• SIGNAL PATH
VIDEO SIGNAL
AUDIO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TR SERIES:CCD- TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
IR TRANSMITTER MODEL:CCD-TR713E/TRV46E
CN001 45P
IC001
IC001 BU9729K-E2
TO VC-215 BOARD(10/10) CN911 (SEE PAGE 4-51)
CONTROL SWITCH BLOCK(MF-8500)
RV001 20k/20k
FAR
NEAR
FADER
S002
FOCUS
INFINITY
MANUAL
AUTO
S001
CN001 8P
CN002 8P
• CONTROL SWITCH BLOCK(MF-8500) is replaced as a block, so that this PRINTED WIRING BOARD is omitted.
LND001 CH GND
LND002 CH GND
BZ002(TR315E/TR516E)
BZ001 XX
D010 MA8082-(K8),SO
D005 MA8082-(K8),SO
D006 MA8082-(K8),SO
D008 MA111-(K8),SO
BH001 LITHIUM BATTERY HOLDER
AE_DIAL
S020
SELECT DIAL
S015
PICTURE EFFECT
MENU
TIME
REC MODE
NOR
PUSH
SSEC
S024
EXPOSURE
BACK LIGHT
AUTO_LOCK
MANUAL
MANUAL_HOLD
DATE
COUNTER RESET
TITLE
PROGRAM AE
S003
S006
S008
S010
S012
S017
S018
S021
*CN007 20P
TO VF-119 BOARD CN5401 (SEE PAGE 4-96)
CN009 24P
TO VF-119 BOARD CN5401 (SEE PAGE 4-96)
*CN008 4P
TO VF-99 BOARD CN901 (SEE PAGE 4-93)
Q003 XX
D013 XX
D014 XX
09

CN008(CCD- TR315E/TR415E/TR425E/TR515E/TR713E)
CN007(CCD- TR516E)


CF-61 BOARD (TRV SERIES)
CONTROL
-REF. NO. : 9,000 SERIES-
XX MARK : NO MOUNT
• SIGNAL PATH
VIDEO SIGNAL
AUDIO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
CN001 45P
TO VC-215 BOARD(10/10) CN911
(SEE PAGE 4-51)
Q001 TALLY LED DRIVE
Q001 UN5213-TX
Q002 XX
D009 XX
R001 XX
XTALLY_LED
CN005 11P
TO PD-107 BOARD(4/4) CN5804
(SEE PAGE 4-88)
CN006 6P
TO PD-107 BOARD(4/4) CN5803
(SEE PAGE 4-88)
CN007 XX 20P
TO VF-119 BOARD CN5401
(SEE PAGE 4-96)
CN008 4P
TO VF-99 BOARD CN901
(SEE PAGE 4-93)
S015 SELECT DIAL
REC MODE
5SEC
PUSH
NOR
S024
D013 XX
PICTURE EFFECT
MENU
TIME
EXPOSURE
BACK LIGHT
FADER
INFINITY
AUTO
DATE
COUNTER RESET
END SEARCH
TITLE
DISPLAY
PROGRAM AE
S006
S010
S021
S012
S017
S003
S008
S013
S018
S022
S004
AD2
AD3(ESX)
AD4
AD5
AD6
CONTROL SWITCH BLOCK(MF-8500)
RV001 20k/20k
FAR
NEAR
FADER
S002
S001
FOCUS
INFINITY
MANUAL
AUTO
CN001 8P
CN002 8P
CN003 2P
SP901 SPEAKER
LND001
LND002
CH GND
D012 XX
D001 01ZA8.2(TPL3)
D003 XX
D004 XX
D007 XX
C001 XX
C002 XX
D005 MA8082-(K8).SO
D006 MA8082-(K8).SO
D008 MA111-(K8).SO
BH001 LITHIUM BATTERY HOLDER

• CONTROL SWITCH BLOCK(MF-8500) is replaced as a block, so that this PRINTED WIRING BOARD is omitted.

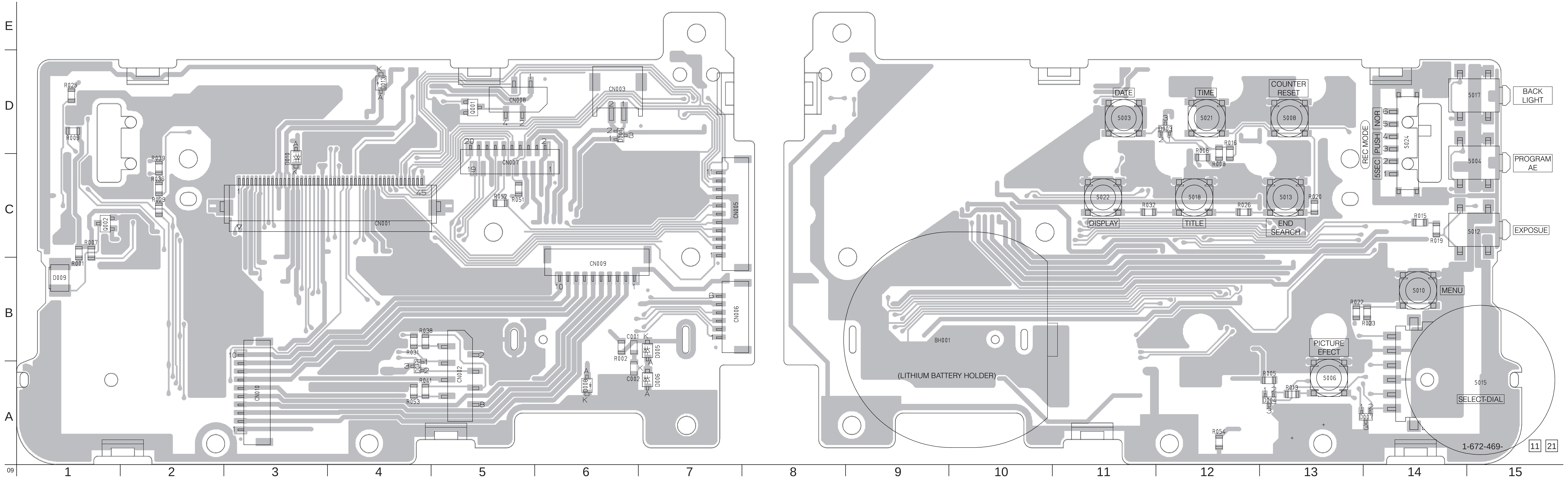
09

CF-61 (CONTROL) (TRV Series) PRINTED WIRING BOARD

– Ref No. CF-61 BOARD: 9,000 series –

CF-61 BOARD (SIDE B)

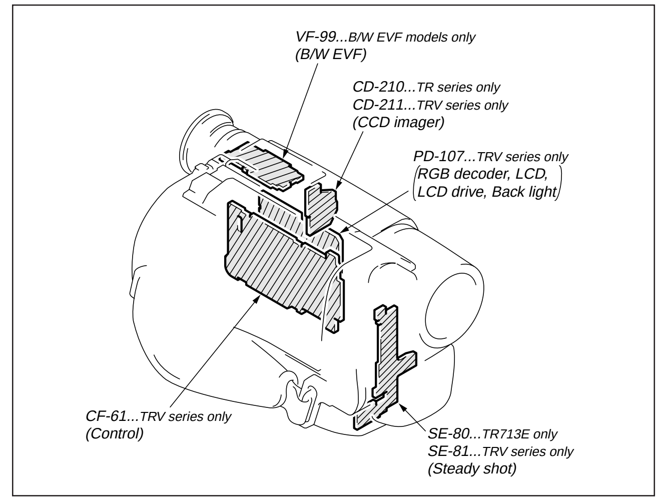
CF-61 BOARD (SIDE A)


E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
09
CN001
CN002
CN005
CN006
CN007
CN009
CN010
D009
BH001
(LITHIUM BATTERY HOLDER)
DATE
TIME
COUNTER RESET
DISPLAY
TITLE
END SEARCH
REC MODE
5SEC
PUSH
NOR
BACK LIGHT
PROGRAM AE
EXPOSUE
MENU
PICTURE EFFECT
SELECT-DIAL
S003
S021
S008
S022
S018
S013
S017
S024
S004
S012
S010
S006
S015
1-672-469-
11
21

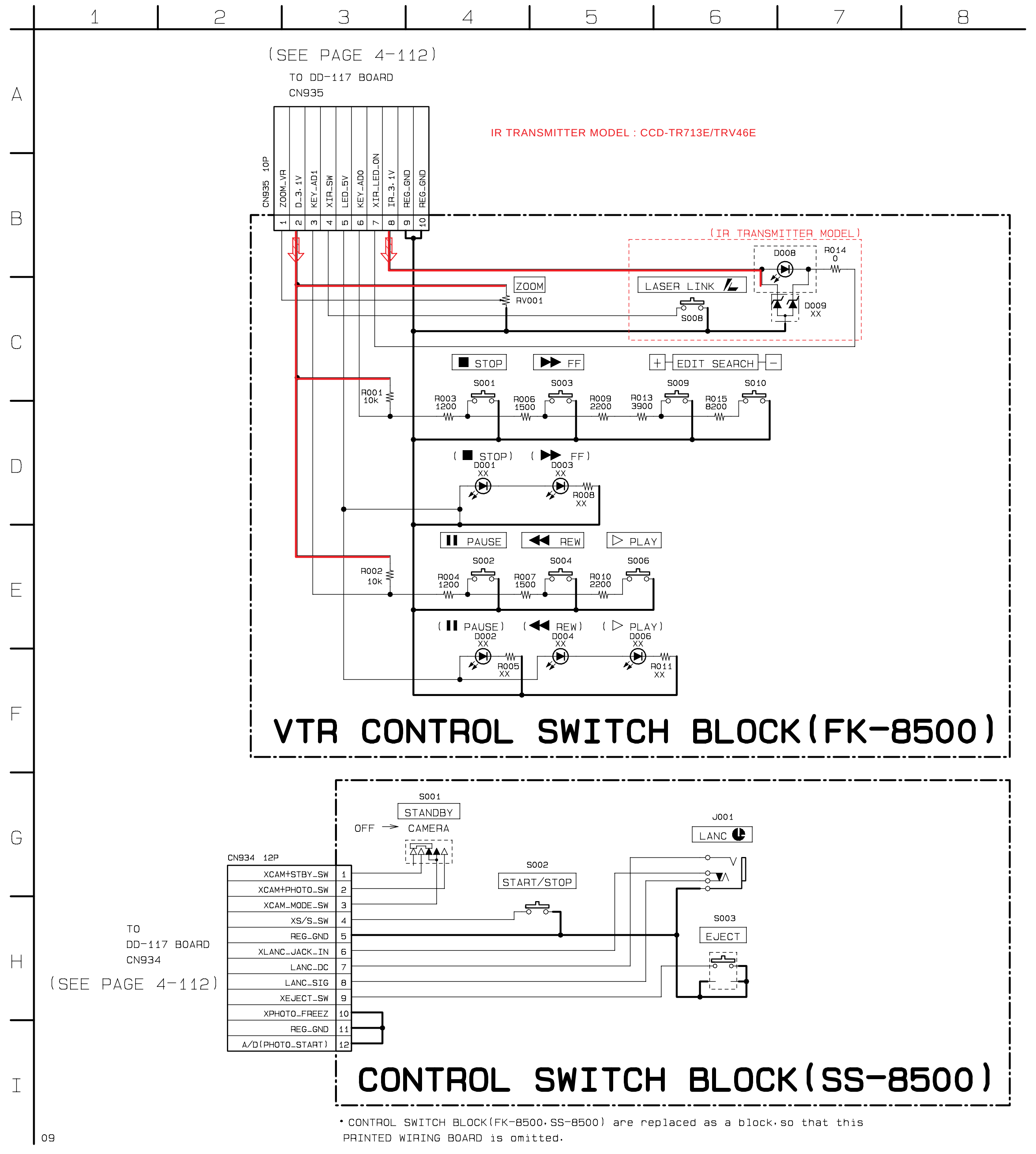
CF-61 BOARD	
BH001	B-9
C001	B-6
C002	A-6
CN001	C-4
CN002	A-5
CN005	C-7
CN006	B-7
CN007	C-5
CN009	B-6
CN010	A-3
D004	A-13
D005	B-7
D006	A-7
D007	A-14
D008	A-6
D009	B-1
D010	C-3
D012	A-4
Q002	C-1
R001	B-1
R002	B-6
R005	A-13
R007	C-1
R013	A-13
R022	B-13
R023	B-14
R029	C-2
R031	B-4
R032	C-11
R036	C-2
R038	B-4
R039	C-2
R041	A-4
R051	C-5
R052	C-5
R053	A-4
R054	A-12
S006	A-13
S010	B-14
S015	A-15
S022	C-11

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.


VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
(RGB decoder, LCD,
LCD drive, Back light)
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)

• Chip transistor   Chip diode


(SEE PAGE 4-112)
TO DD-117 BOARD
CN935
CN935 10P
ZOOM_VR
D_3.1V
KEY_AD1
XIR_SW
LED_5V
KEY_AD0
XIR_LED_ON
IR_3.1V
REG_GND
REG_GND
IR TRANSMITTER MODEL : CCD-TR713E/TRV46E
(IR TRANSMITTER MODEL)
D008
R014
0
LASER LINK
D009
XX
S008
ZOOM
RV001
STOP
FF
EDIT SEARCH
S001
S003
S009
S010
R001
10k
R003
1200
R006
1500
R009
2200
R013
3900
R015
8200
(STOP)
(FF)
D001
XX
D003
XX
R008
XX
PAUSE
REW
PLAY
S002
S004
S006
R002
10k
R004
1200
R007
1500
R010
2200
(PAUSE)
(REW)
(PLAY)
D002
XX
D004
XX
D006
XX
R005
XX
R011
XX
VTR CONTROL SWITCH BLOCK(FK-8500)
S001
STANDBY
OFF → CAMERA
J001
LANC
S002
START/STOP
S003
EJECT
CN934 12P
XCAM+STBY_SW
XCAM+PHOTO_SW
XCAM_MODE_SW
XS/S_SW
REG_GND
XLANC_JACK_IN
LANC_DC
LANC_SIG
XEJECT_SW
XPHOTO_FREEZ
REG_GND
A/D(PHOTO_START)
TO
DD-117 BOARD
CN934
(SEE PAGE 4-112)
CONTROL SWITCH BLOCK(SS-8500)
09

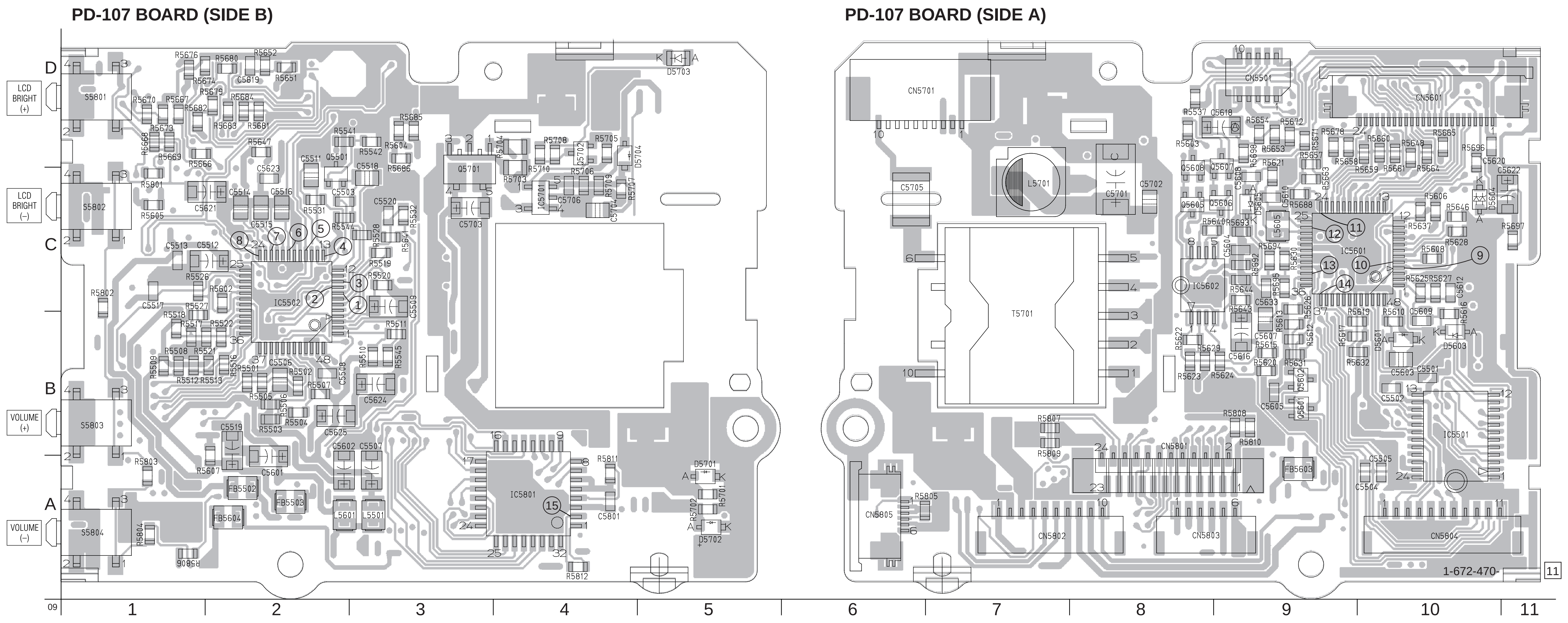
• CONTROL SWITCH BLOCK(FK-8500,SS-8500) are replaced as a block,so that this PRINTED WIRING BOARD is omitted.

PD-107 BOARD

C5501	B-10
C5502	B-10
C5503	C-2
C5504	A-10
C5505	A-10
C5506	B-2
C5507	A-3
C5508	B-2
C5509	C-3
C5511	C-2
C5512	C-2
C5513	C-1
C5514	C-2
C5515	C-2
C5516	C-2
C5517	C-1
C5518	C-3
C5519	B-2
C5520	C-3
C5601	A-2
C5602	A-2
C5603	B-10
C5604	C-9
C5605	B-9
C5607	B-9
C5608	C-9
C5609	B-10
C5610	C-9
C5612	C-10
C5616	B-9
C5618	D-9
C5619	D-2
C5620	D-10
C5621	C-2
C5622	C-11
C5623	C-2
C5624	B-3
C5625	B-2
C5633	C-9
C5701	C-8
C5702	C-8
C5703	C-3
C5704	C-4
C5705	C-6
C5706	C-4
C5801	A-4
CN5501	D-9
CN5601	D-10
CN5701	D-6
CN5801	A-8
CN5802	A-7
CN5803	A-8
CN5804	A-10
CN5805	A-6
D5601	B-10
D5603	B-10
D5604	C-10
D5605	C-9
D5701	A-5
D5702	A-5
D5703	D-5
D5704	D-4
FB5502	A-2
FB5503	A-2
FB5504	A-2
FB5603	A-9
IC5501	B-10
IC5502	C-2
IC5601	C-9
IC5602	C-8
IC5701	C-4
IC5801	A-4
L5501	A-3
L5601	A-2
L5605	C-9
L5701	C-7
Q5501	C-2
Q5601	B-9
Q5602	B-9
Q5605	C-8
Q5606	C-9
Q5607	C-9
Q5608	C-8
Q5701	C-3
Q5702	D-4
R5501	B-2
R5502	B-2
R5503	B-2
R5504	B-2
R5505	B-2
R5506	B-2
R5507	B-2
R5508	B-1
R5509	B-1
R5510	B-3
R5511	B-3
R5512	B-1
R5513	B-2
R5516	B-2
R5517	B-1
R5518	B-1
R5519	C-3
R5520	C-3
R5521	B-2
R5522	B-2
R5526	C-1
R5527	B-1
R5528	C-3
R5531	C-2
R5532	C-3
R5537	D-8
R5541	D-2
R5542	D-3
R5544	C-2
R5545	B-3
R5602	C-2
R5603	D-8
R5604	D-3
R5605	C-1
R5606	C-10
R5607	A-2
R5608	B-9
R5608	C-10
R5610	B-10
R5612	B-9
R5613	B-9
R5615	B-9
R5616	B-10
R5617	B-10
R5619	B-10
R5620	B-9
R5621	C-9
R5622	B-8
R5623	B-8
R5624	B-9
R5625	C-10
R5626	C-9
R5627	C-10
R5628	C-10
R5629	B-8
R5630	C-9
R5631	B-9
R5632	B-10
R5637	C-10
R5640	C-9
R5641	C-3
R5643	C-9
R5644	C-9
R5646	C-10
R5647	D-2
R5648	D-10
R5651	D-2
R5652	D-2
R5653	D-9
R5654	D-9
R5657	D-9
R5658	D-9
R5659	D-10
R5660	D-10
R5661	D-10
R5663	C-9
R5664	D-10
R5665	D-10
R5666	D-1
R5667	D-1
R5668	D-1
R5669	D-1
R5670	D-1
R5671	D-9
R5672	D-9
R5673	D-1
R5674	D-1
R5676	D-1
R5678	D-9
R5679	D-2
R5680	D-2
R5681	D-2
R5682	D-1
R5683	D-2
R5684	D-2
R5685	D-3
R5686	D-3
R5688	C-9
R5692	C-9
R5693	C-9
R5694	C-9
R5695	C-9
R5696	D-10
R5697	C-11
R5698	D-9
R5701	A-5
R5702	A-5
R5703	C-4
R5704	D-4
R5705	D-4
R5706	C-4
R5707	C-4
R5708	D-4
R5709	C-4
R5710	D-4
R5801	C-1
R5802	C-1
R5803	A-1
R5804	A-1
R5805	A-7
R5806	A-1
R5807	B-7
R5809	B-7
R5810	B-9
R5811	A-4
R5812	A-4
S5801	D-1
S5802	C-1
S5803	B-1
S5804	A-1
T5701	B-7

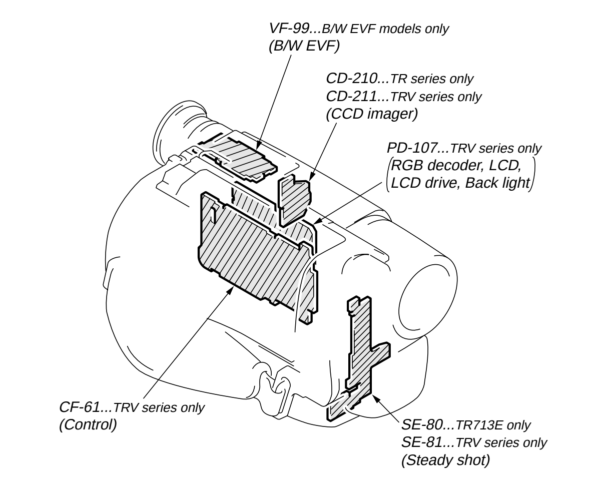
PD-107 (RGB DECODER, LCD DRIVE, BACK LIGHT, LCD (TRV Series)) PRINTED WIRING BOARD

– Ref No. PD-107 BOARD: 10,000 series –


PD-107 BOARD (SIDE B)

PD-107 BOARD (SIDE A)

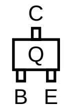
D
C
B
A
LCD BRIGHT (+)
LCD BRIGHT (–)
VOLUME (+)
VOLUME (–)
S5801
S5802
S5803
S5804
IC5501
IC5502
IC5801
IC5601
IC5602
CN5701
CN5801
CN5802
CN5803
CN5804
CN5805
L5701
T5701
1-672-470-
11
09
1
2
3
4
5
6
7
8
9
10
11

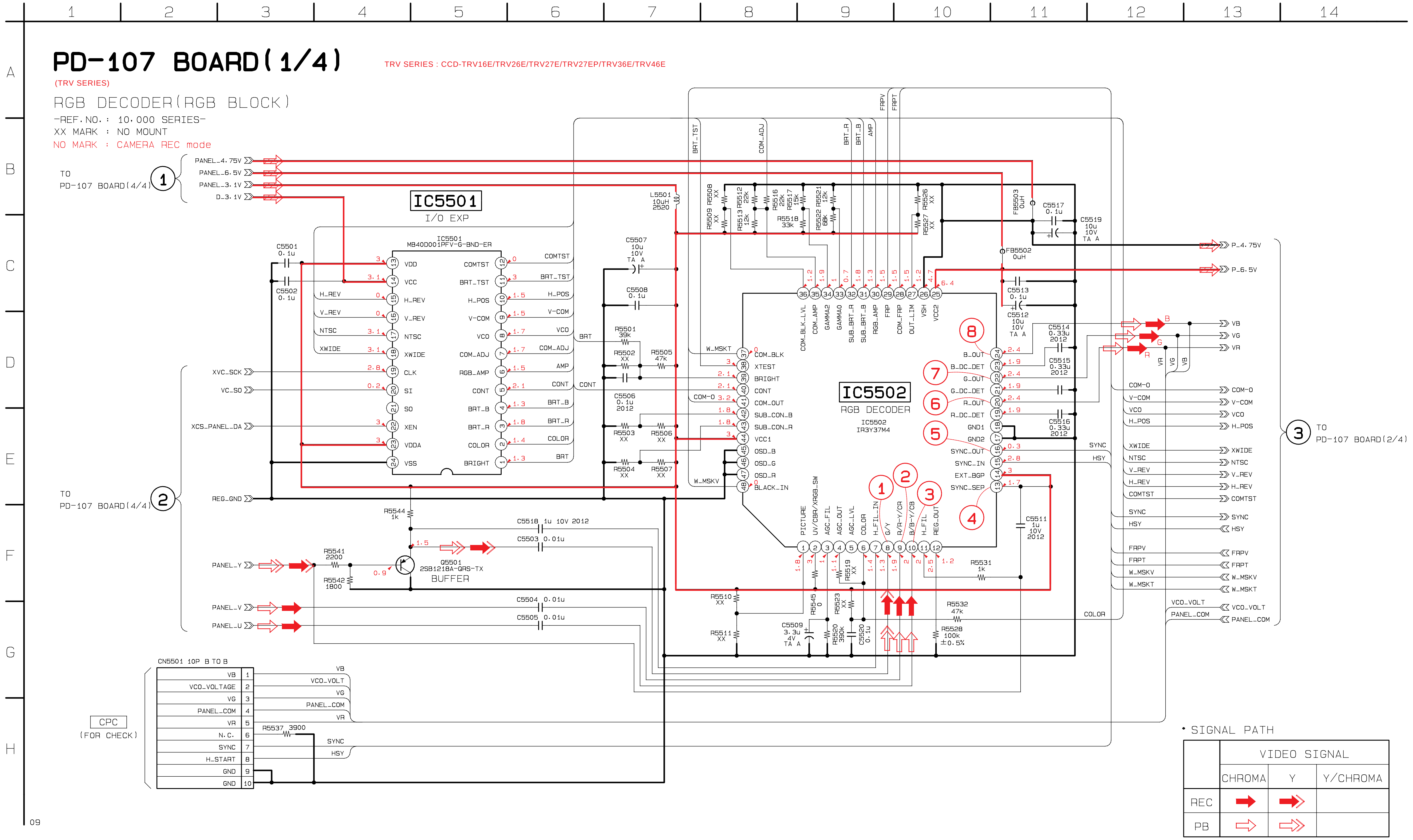

VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
(RGB decoder, LCD,
LCD drive, Back light)
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

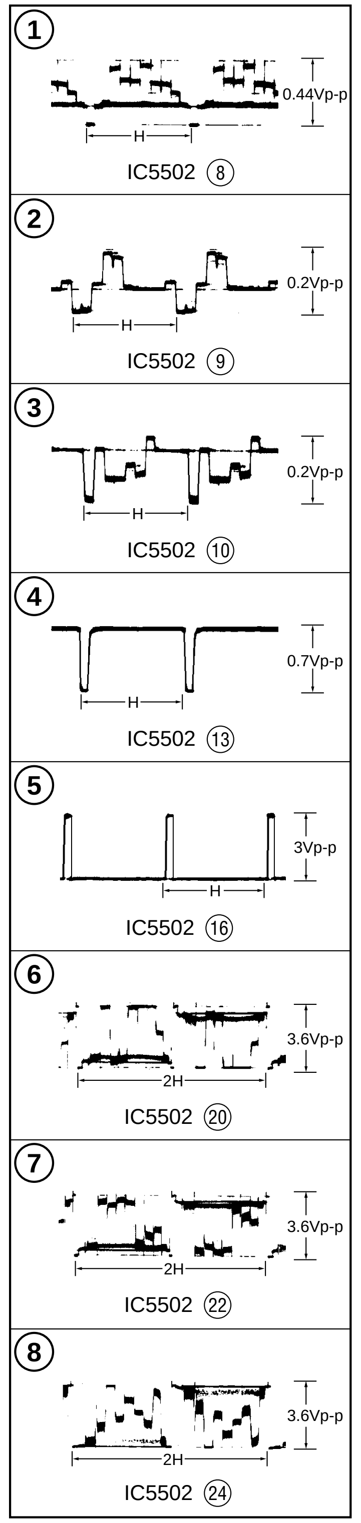



PD-107 BOARD(1/4)
(TRV SERIES)
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
RGB DECODER(RGB BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO PD-107 BOARD(4/4)
TO PD-107 BOARD(1/4)
TO PD-107 BOARD(2/4)
IC5501
I/O EXP
IC5501 MB40D001PFV-G-BND-ER
IC5502
RGB DECODER
IC5502 IR3Y37M4
Q5501 2SB1218A-QRS-TX BUFFER
CN5501 10P B TO B
CPC (FOR CHECK)
09

• SIGNAL PATH

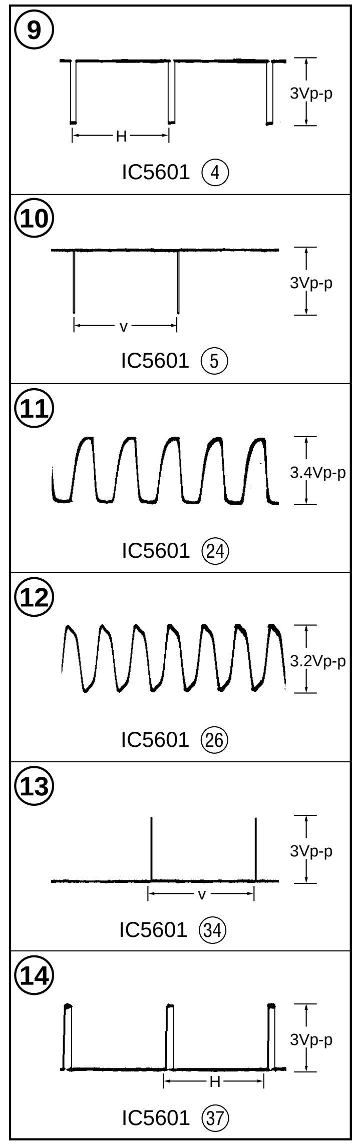
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	
PB	⇨	⇨	

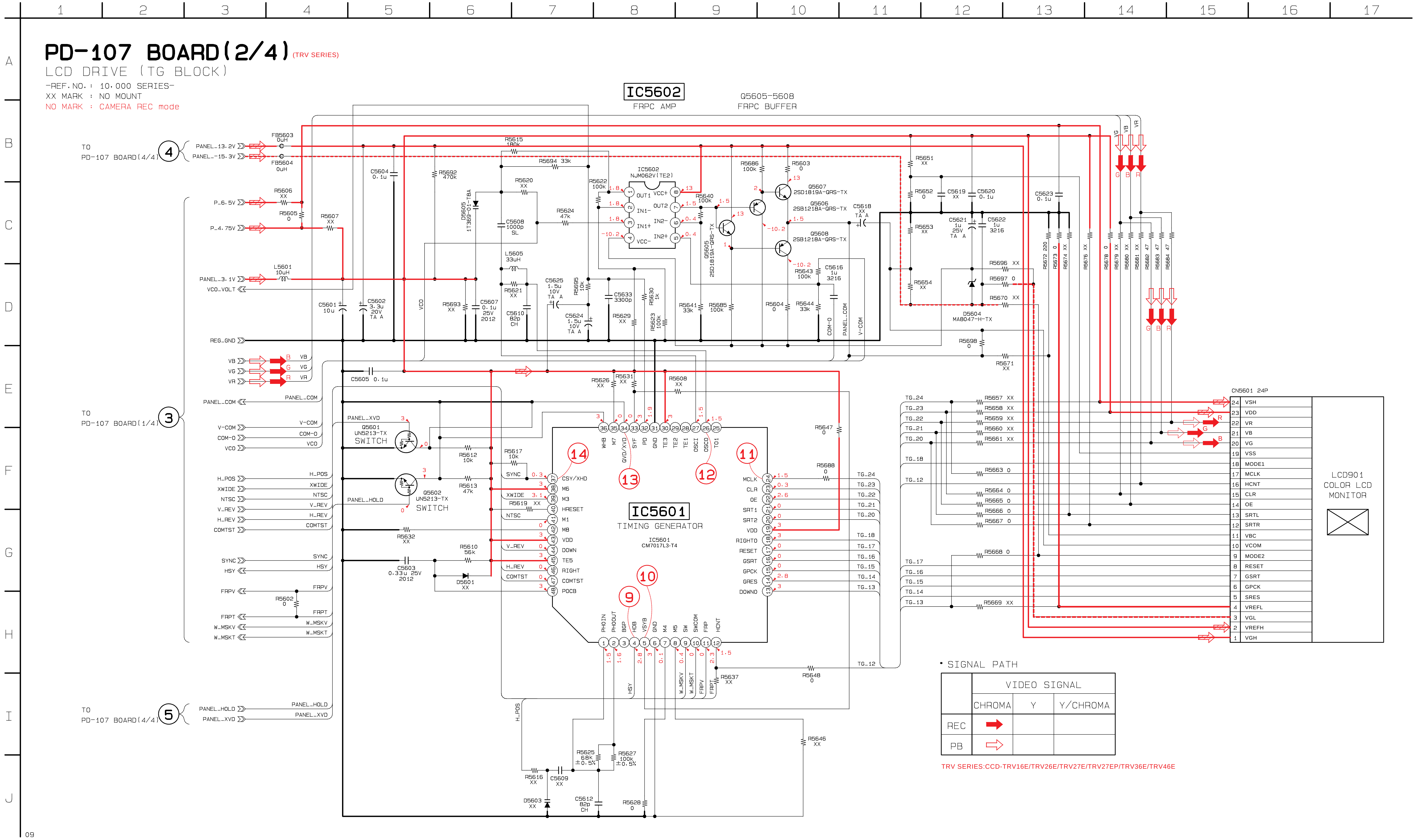
PD-107 BOARD (1/4)
CAMERA REC



- For schematic diagrams.
- Refer to page 4–79 for Printed Wiring Board.

PD-107 BOARD (2/4)
CAMERA REC



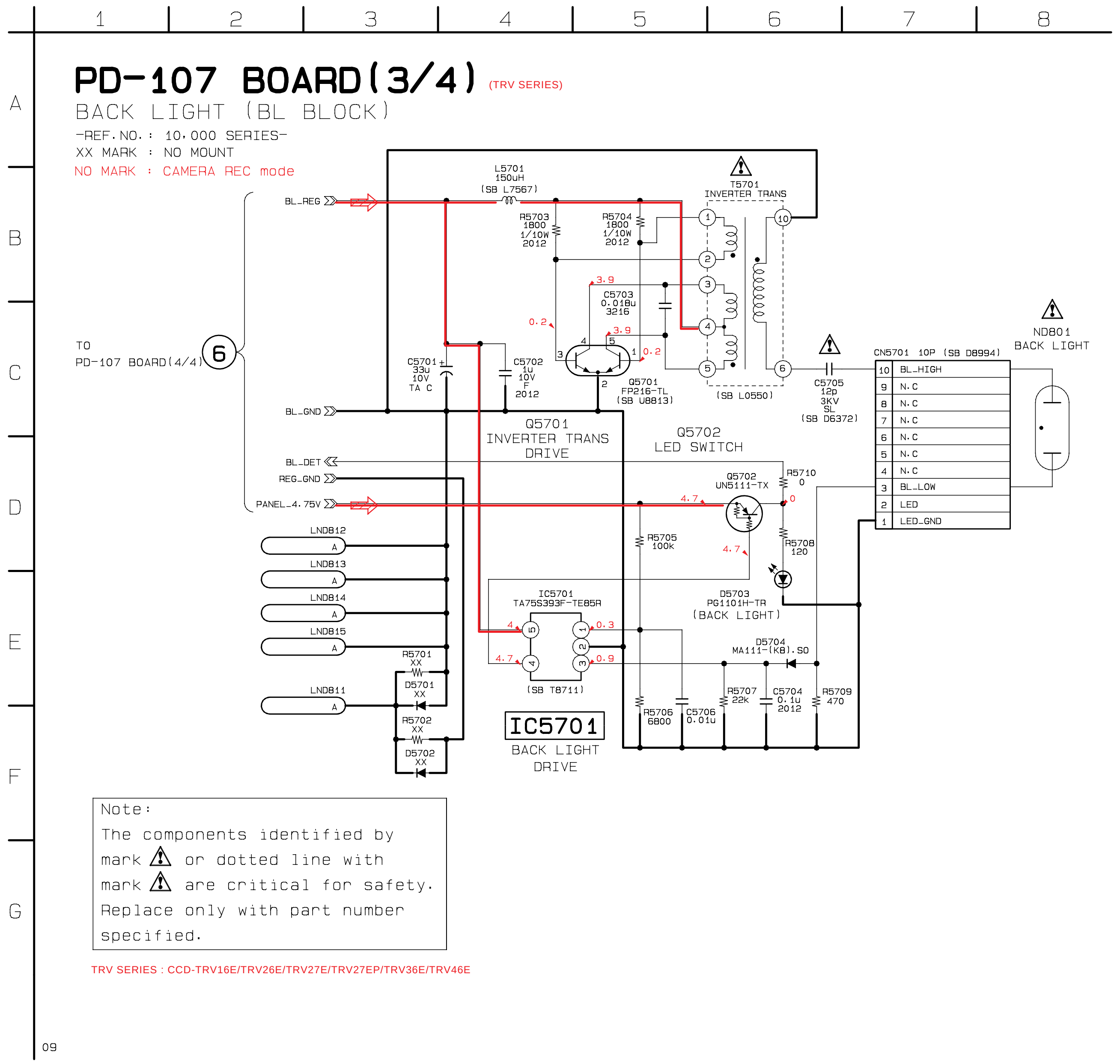

PD-107 BOARD(2/4) (TRV SERIES)
LCD DRIVE (TG BLOCK)
-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
IC5602
FRPC AMP
Q5605-5608
FRPC BUFFER
TO PD-107 BOARD(4/4) ④
PANEL_13.2V
PANEL_-15.3V
P_6.5V
P_4.75V
PANEL_3.1V
VCO_VOLT
REG_GND
TO PD-107 BOARD(1/4) ③
VB
VG
VR
PANEL_COM
V-COM
COM-O
VCO
H_POS
XWIDE
NTSC
V_REV
H_REV
COMTST
SYNC
HSY
FRPV
FRPT
W_MSKV
W_MSKT
TO PD-107 BOARD(4/4) ⑤
PANEL_HOLD
PANEL_XVD
Q5601 UN5213-TX SWITCH
Q5602 UN5213-TX SWITCH
IC5602 NJM062V(TE2)
Q5607 2SD1819A-QRS-TX
Q5606 2SB1218A-QRS-TX
Q5608 2SB1218A-QRS-TX
Q5605 2SD1819A-QRS-TX
D5604 MA8047-H-TX
D5601
IC5601
TIMING GENERATOR
IC5601 CM7017L3-T4
WHB
WT
GVD/XVD
SYF
PD
GND
TE3
TE2
TE1
OSCI
OSCO
TO1
CSY/XHD
M6
M3
HRESET
M1
M8
VDD
DOWN
TES
RIGHT
COMTST
POCB
MCLK
CLR
OE
SRT1
SRT2
VDD
RIGHTO
RESET
GSRT
GPCK
GRES
DOWNO
PHOIN
PHOOUT
BSP
HDB
VSYB
GND
M4
M5
SW
SWCOM
FRP
HCNT
⑨ ⑩ ⑪ ⑫ ⑬ ⑭
CN5601 24P
24 VSH
23 VDD
22 VR
21 VB
20 VG
19 VSS
18 MODE1
17 MCLK
16 HCNT
15 CLR
14 OE
13 SRTL
12 SRTR
11 VBC
10 VCOM
9 MODE2
8 RESET
7 GSRT
6 GPCK
5 SRES
4 VREFL
3 VGL
2 VREFH
1 VGH
LCD901
COLOR LCD
MONITOR
TG_24
TG_23
TG_22
TG_21
TG_20
TG_18
TG_17
TG_16
TG_15
TG_14
TG_13
TG_12
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J
09

• SIGNAL PATH

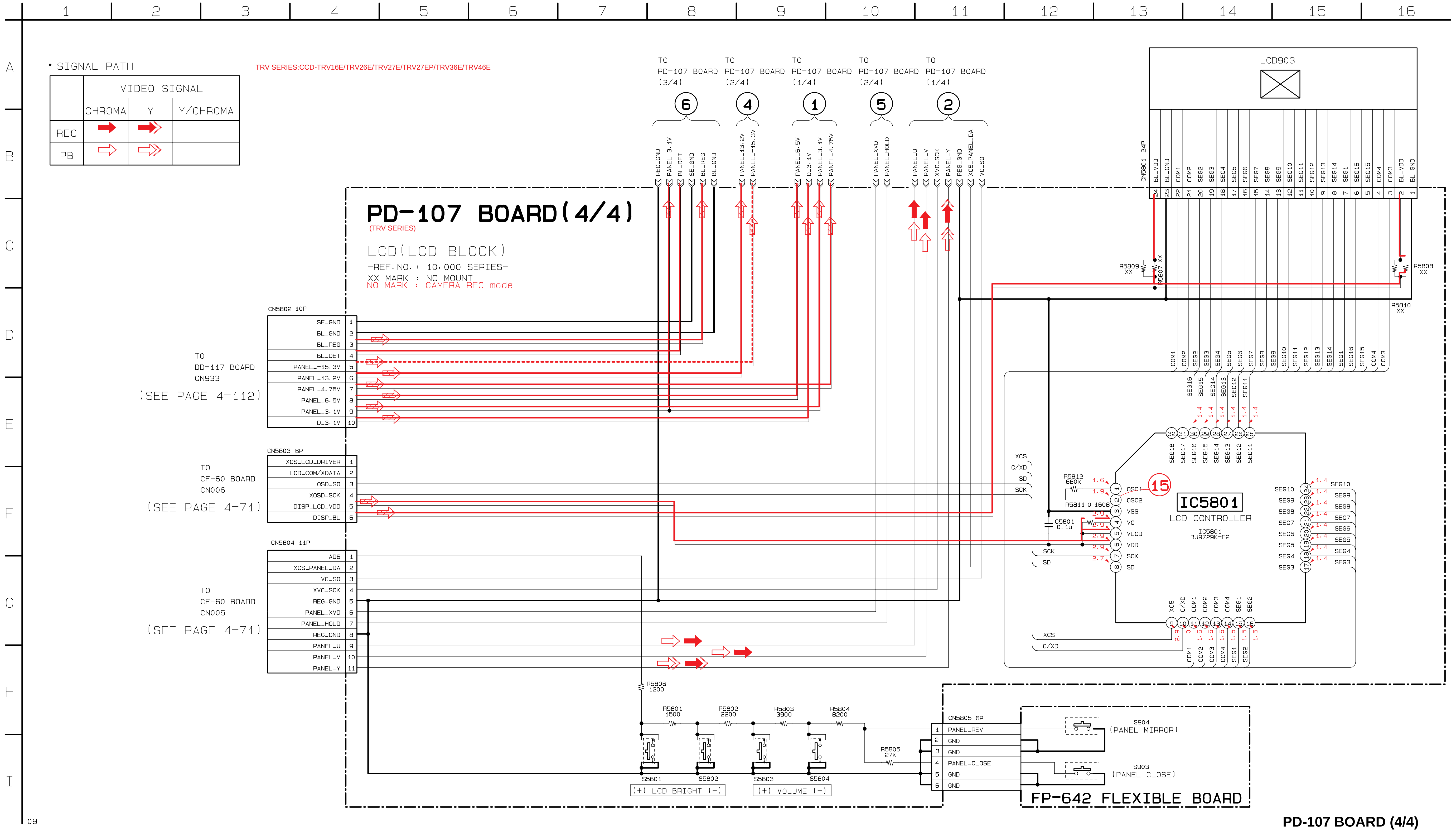
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

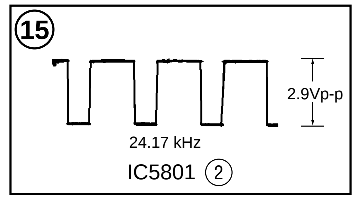
- **For schematic diagrams.**
- Refer to page 4–79 for Printed Wiring Board.


PD-107 BOARD(3/4) (TRV SERIES)
BACK LIGHT (BL BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO PD-107 BOARD(4/4) 6
BL_REG
BL_GND
BL_DET
REG_GND
PANEL_4.75V
L5701 150uH
T5701 INVERTER TRANS
Q5701 FP216-TL
Q5701 INVERTER TRANS DRIVE
Q5702 LED SWITCH
Q5702 UN5111-TX
IC5701 TA75S393F-TE85R
IC5701 BACK LIGHT DRIVE
D5703 PG1101H-TR (BACK LIGHT)
CN5701 10P
BL_HIGH
BL_LOW
LED
LED_GND
ND801 BACK LIGHT
LND811
LND812
LND813
LND814
LND815
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.
TRV SERIES : CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
09

- **For schematic diagrams.**
- Refer to page 4–79 for Printed Wiring Board.


SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E
PD-107 BOARD(4/4) (TRV SERIES)
LCD(LCD BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO PD-107 BOARD (3/4) 6
TO PD-107 BOARD (2/4) 4
TO PD-107 BOARD (1/4) 1
TO PD-107 BOARD (2/4) 5
TO PD-107 BOARD (1/4) 2
CN5802 10P
TO DD-117 BOARD CN933 (SEE PAGE 4-112)
CN5803 6P
TO CF-60 BOARD CN006 (SEE PAGE 4-71)
CN5804 11P
TO CF-60 BOARD CN005 (SEE PAGE 4-71)
LCD903
CN5801 24P
IC5801 LCD CONTROLLER
IC5801 BU9725K-E2
15
CN5805 6P
S904 (PANEL MIRROR)
S903 (PANEL CLOSE)
FP-642 FLEXIBLE BOARD
S5801 S5802 (+) LCD BRIGHT (-)
S5803 S5804 (+) VOLUME (-)
09

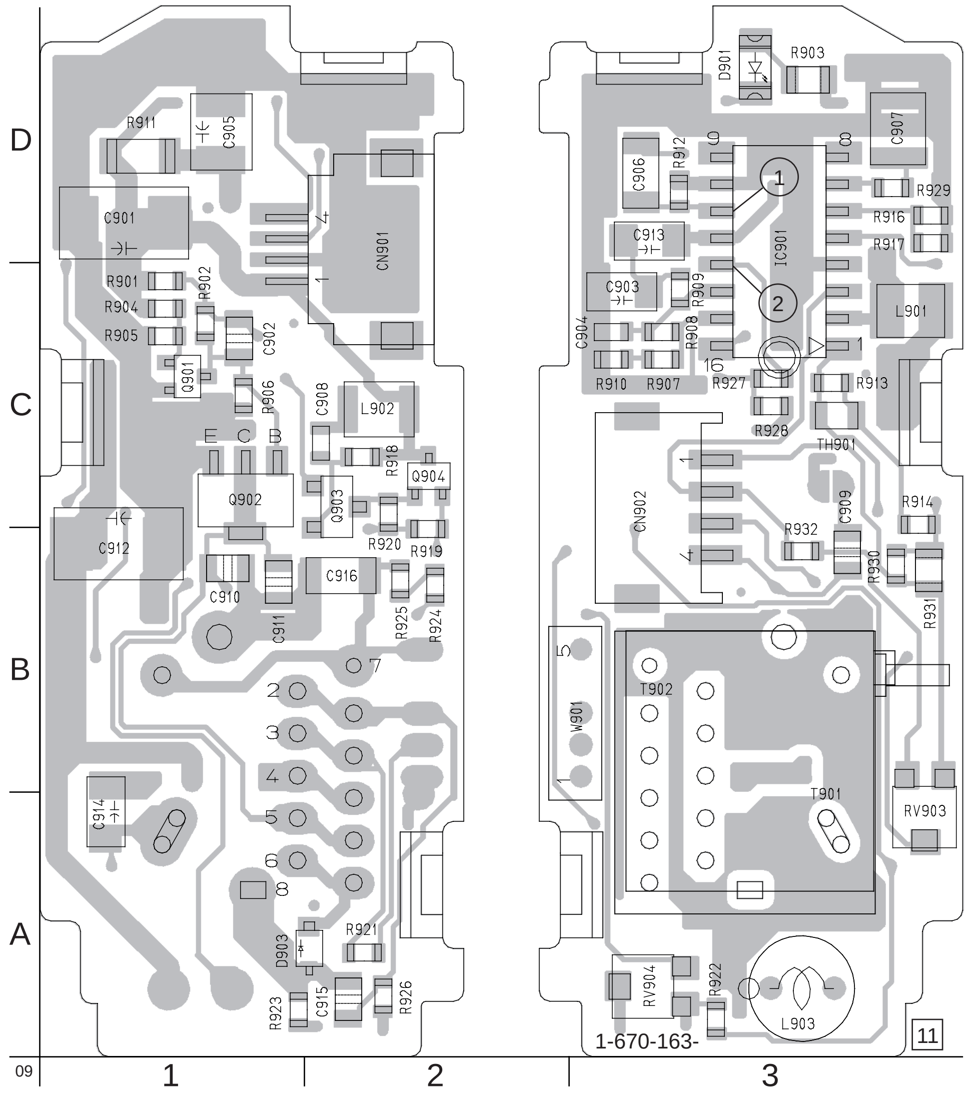
PD-107 BOARD (4/4)
CAMERA REC



VF-99 (B/W EVF (B/W EVF MODEL)) PRINTED WIRING BOARD

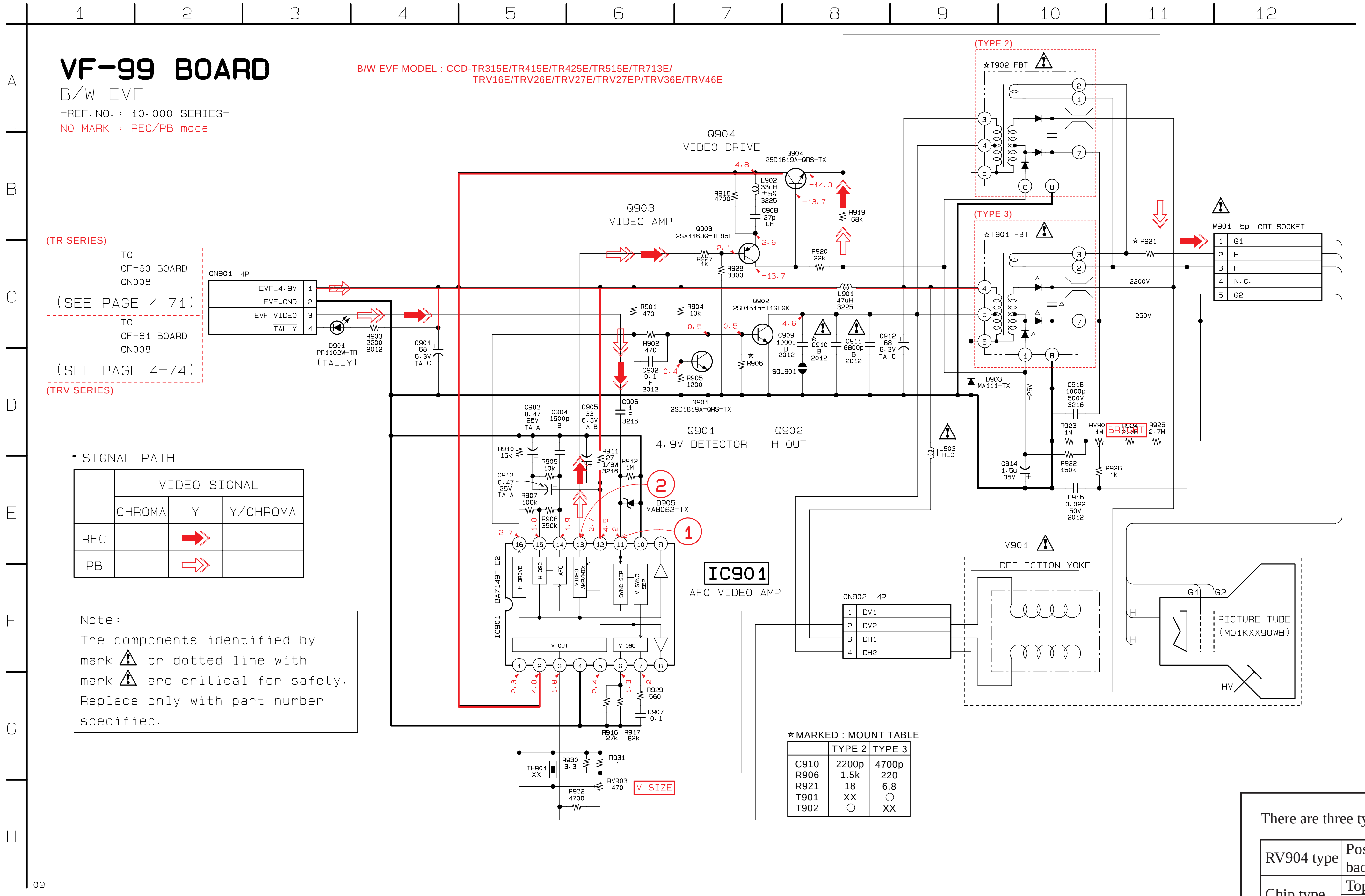
– Ref No. VF-99 BOARD: 10,000 series –

VF-99 BOARD (SIDE B) VF-99 BOARD (SIDE A)


D
C
B
A
1
2
3
09
1-670-163-
11
C901
C905
R911
R901
R904
R905
R902
Q901
C902
R906
C908
L902
R918
Q904
Q902
Q903
R920
R919
C912
C910
C916
C911
R925
R924
C914
D903
C915
R921
R923
R926
CN901
C906
R912
C913
C903
C904
R909
R908
R910
R907
R927
IC901
C907
R929
R916
R917
L901
R913
R928
TH901
CN902
R914
R932
C909
R930
R931
W901
T902
T901
RV903
RV904
R922
L903
D901
R903

VF-99 BOARD (TYPE 2/TYPE 3)

C901	D-1	R919	B-2
C902	C-1	R920	C-2
C903	C-3	R921	A-2
C904	C-3	R922	A-3
C905	D-1	R923	A-1
C906	D-3	R924	B-2
C907	D-3	R925	B-2
C908	C-2	R926	A-2
C909	B-3	R927	C-3
C910	B-1	R928	C-3
C911	B-1	R929	D-3
C912	B-1	R930	B-3
C913	D-3	R931	B-3
C914	A-1	R932	B-3
C915	A-2		
C916	B-2	RV903	A-3
		RV904	A-3
CN901	D-2		
CN902	C-3	T901	B-3
		T902	B-3
D901	D-3		
D903	A-2	TH901	C-3
IC901	D-3	W901	B-3
L901	C-3		
L902	C-2		
L903	A-3		
Q901	C-1		
Q902	C-1		
Q903	C-2		
Q904	C-2		
R901	C-1		
R902	C-1		
R903	D-3		
R904	C-1		
R905	C-1		
R906	C-1		
R907	C-3		
R908	C-3		
R909	C-3		
R910	C-3		
R911	D-1		
R912	D-3		
R913	C-3		
R914	C-3		
R916	D-3		
R917	D-3		
R918	C-2		


1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H
09
(TR SERIES)
TO CF-60 BOARD CN008
(SEE PAGE 4-71)
TO CF-61 BOARD CN008
(SEE PAGE 4-74)
(TRV SERIES)
CN901 4P
EVF_4.9V
EVF_GND
EVF_VIDEO
TALLY
D901 PR1102W-TR (TALLY)
Q904 VIDEO DRIVE
Q903 VIDEO AMP
Q901 4.9V DETECTOR
Q902 H OUT
IC901 AFC VIDEO AMP
BA7149F-E2
CN902 4P
DV1
DV2
DH1
DH2
V901 DEFLECTION YOKE
W901 5P CRT SOCKET
G1
H
H
N.C.
G2
PICTURE TUBE (M01KXX90WB)
HV
(TYPE 2) ★T902 FBT
(TYPE 3) ★T901 FBT
2200V
250V
L903 HLC
D903 MA111-TX
RV904
RV903 470 V SIZE
TH901 XX

VF-99 BOARD

B/W EVF

-REF.NO.: 10,000 SERIES-

NO MARK : REC/PB mode

B/W EVF MODEL : CCD-TR315E/TR415E/TR425E/TR515E/TR713E/
TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

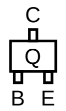
★MARKED : MOUNT TABLE

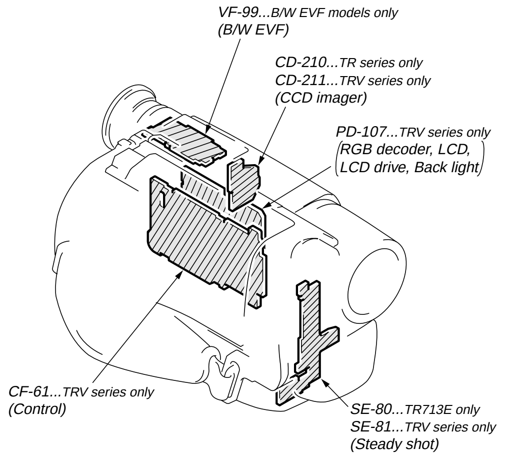
	TYPE 2	TYPE 3
C910	2200p	4700p
R906	1.5k	220
R921	18	6.8
T901	XX	○
T902	○	XX

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

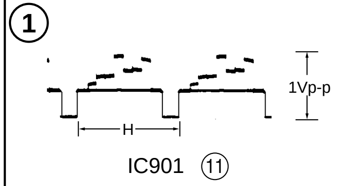
There are few cases that the part isn't mounted in this model is printed on this diagram.

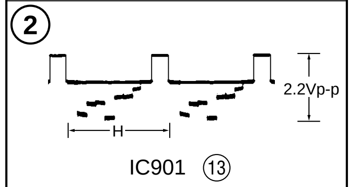
- Chip transistor




VF-99...B/W EVF models only
(B/W EVF)
CD-210...TR series only
CD-211...TRV series only
(CCD imager)
PD-107...TRV series only
(RGB decoder, LCD, LCD drive, Back light)
CF-61...TRV series only
(Control)
SE-80...TR713E only
SE-81...TRV series only
(Steady shot)

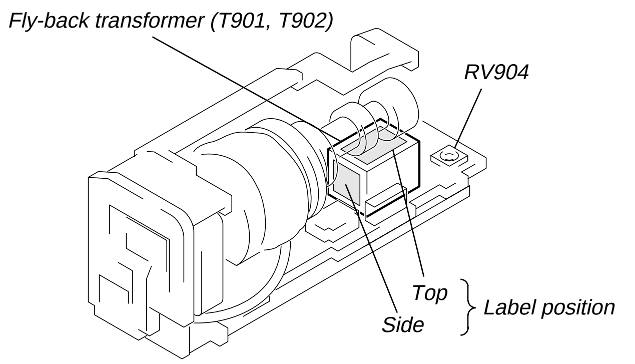
VF-99 BOARD CAMERA REC





There are three types by combining RV904 and the fly-back transformer.

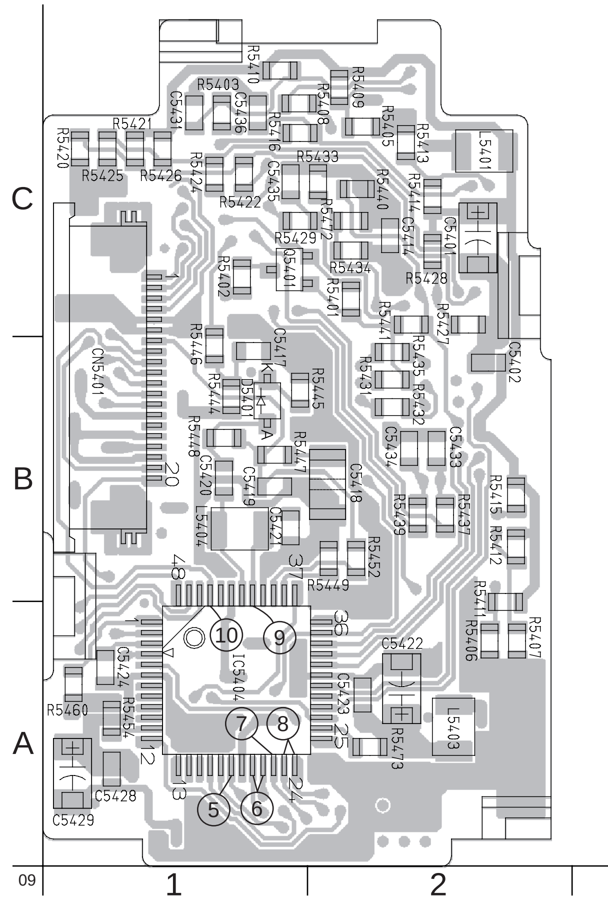
RV904 type	Position to attach fly-back transformer label	TYPE
Chip type	Top (T902)	TYPE 2
	Side (T901)	TYPE 3


Fly-back transformer (T901, T902)
RV904
Top
Side
Label position

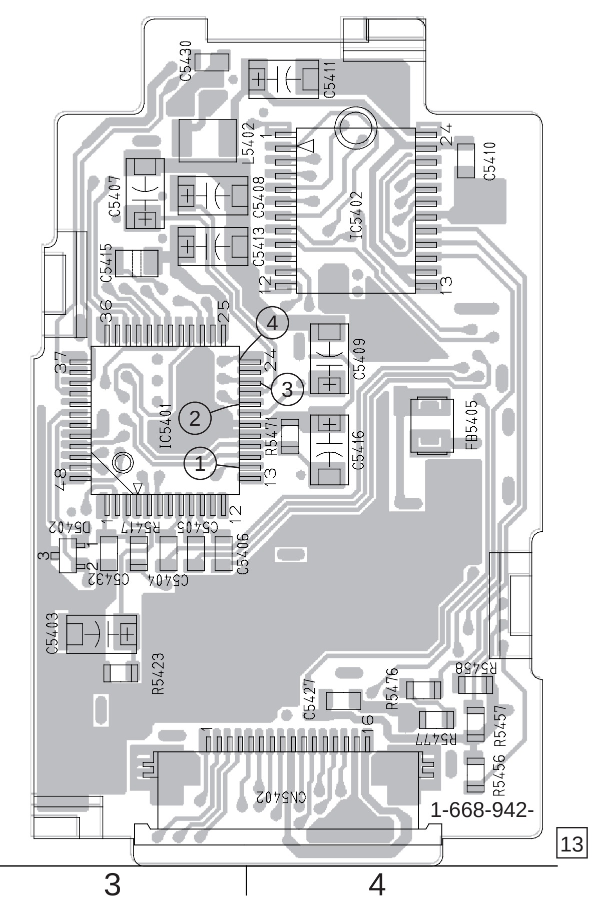
VF-119 (COLOR EVF (COLOR EVF MODEL)) PRINTED WIRING BOARD

– Ref No. VF-119 BOARD: 10,000 series –

VF-119 BOARD (SIDE B)


C
B
A
09
1
2
C5429
C5428

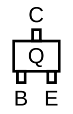
VF-119 BOARD (SIDE A)

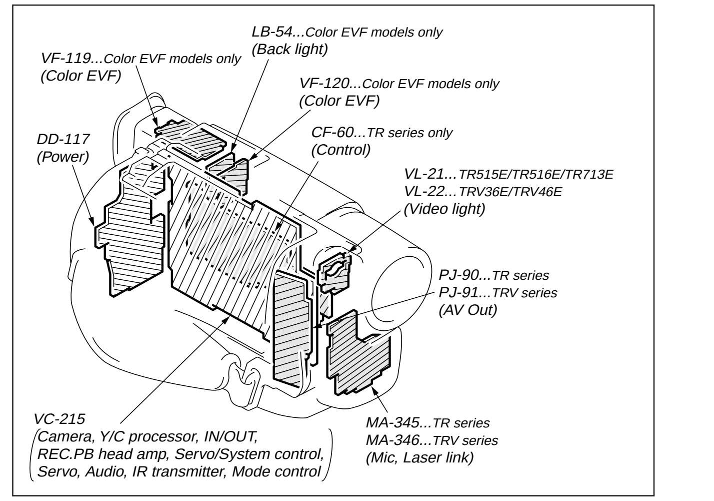

3
4
1-668-942-
13

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

> There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

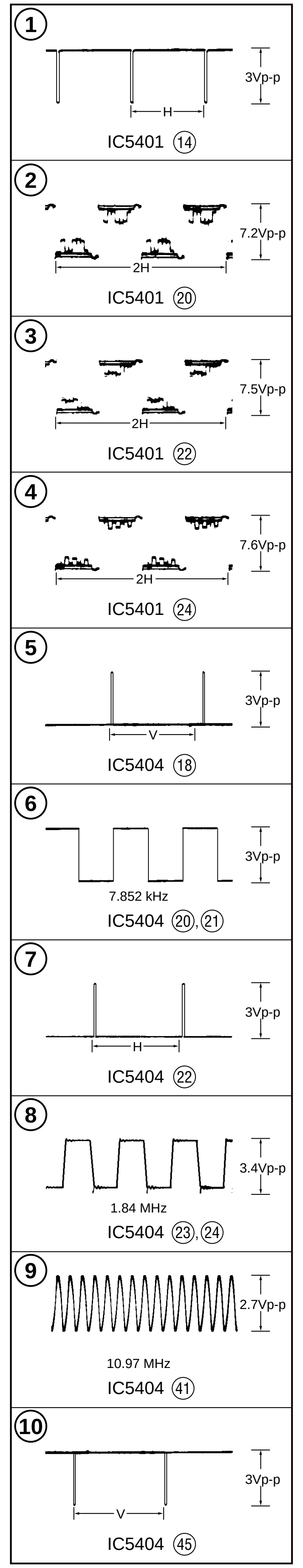


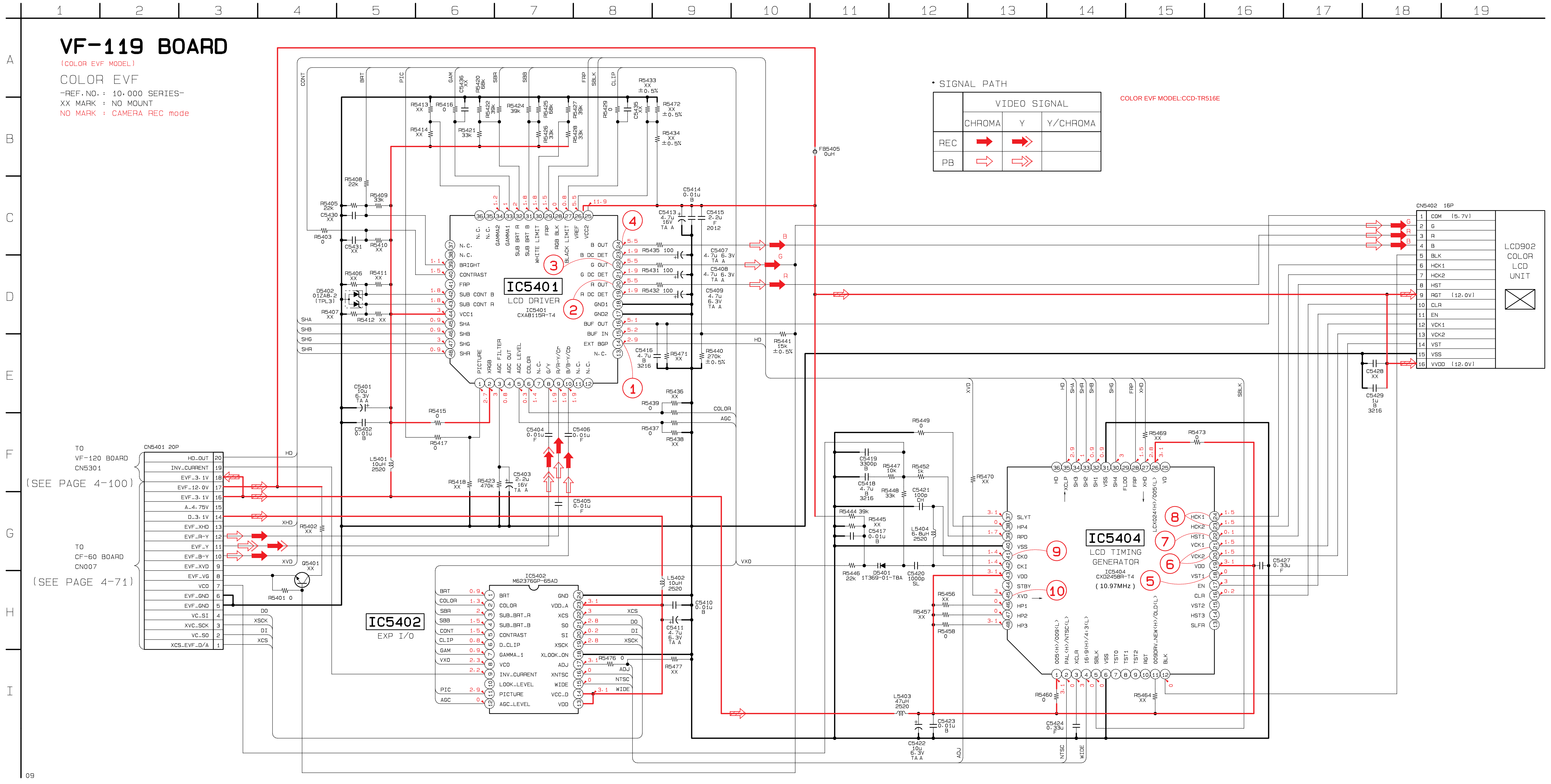

LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

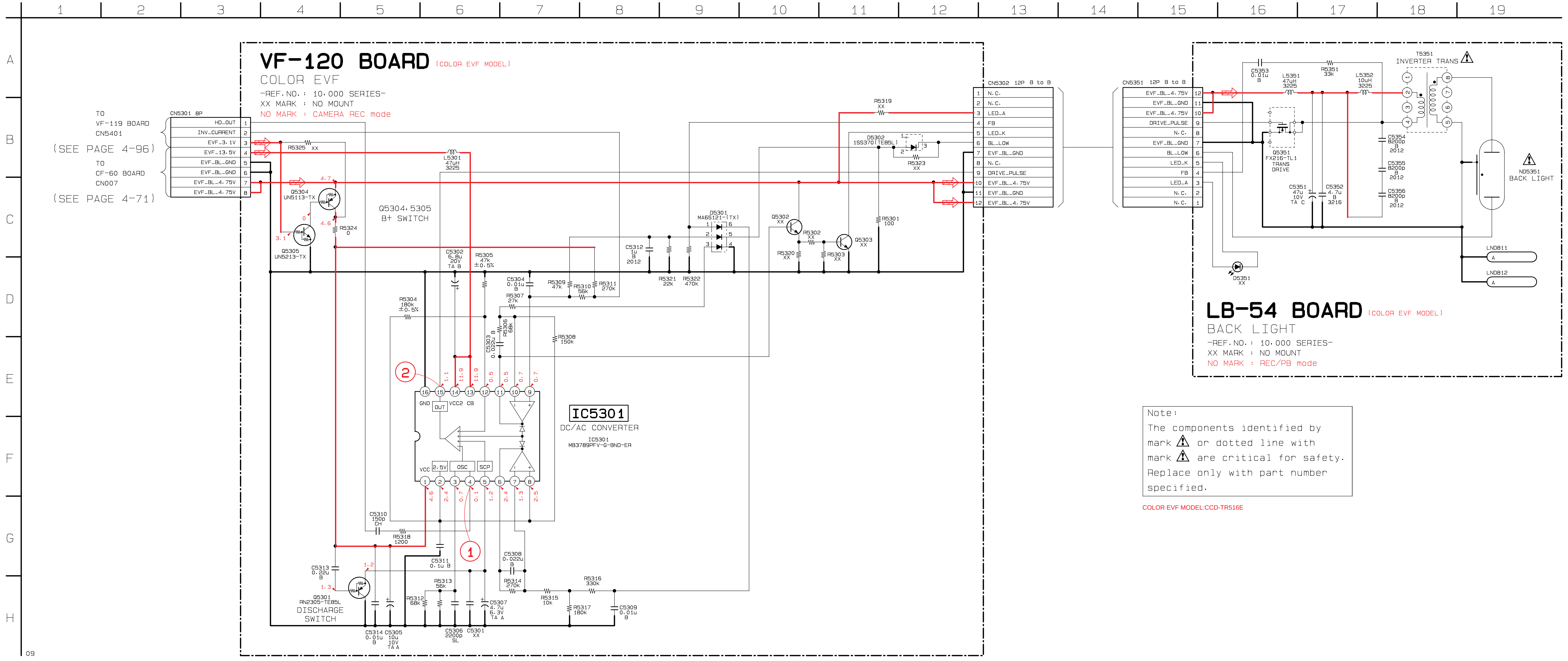
VF-119 BOARD

C5401	C-2	R5401	C-2
C5402	B-2	R5402	C-1
C5403	A-3	R5403	C-1
C5404	B-3	R5405	C-2
C5405	B-3	R5406	A-2
C5406	B-3	R5407	A-2
C5407	C-3	R5408	C-1
C5408	C-3	R5409	C-2
C5409	B-4	R5410	C-1
C5410	C-4	R5411	A-2
C5411	C-4	R5412	B-2
C5413	C-3	R5413	C-2
C5414	C-2	R5414	C-2
C5415	C-3	R5415	B-2
C5416	B-4	R5416	C-1
C5417	B-1	R5417	B-3
C5418	B-2	R5420	C-1
C5419	B-1	R5421	C-1
C5420	B-1	R5422	C-1
C5421	B-1	R5423	A-3
C5422	A-2	R5424	C-1
C5423	A-2	R5425	C-1
C5424	A-1	R5426	C-1
C5427	A-4	R5427	C-2
C5428	A-1	R5428	C-2
C5429	A-1	R5429	C-1
C5430	C-3	R5431	B-2
C5431	C-1	R5432	B-2
C5432	B-3	R5433	C-2
C5433	B-2	R5434	C-2
C5434	B-2	R5435	B-2
C5435	C-1	R5437	B-2
C5436	C-1	R5439	B-2
		R5440	C-2
CN5401	B-1	R5441	C-2
CN5402	A-4	R5444	B-1
		R5445	B-1
D5401	B-1	R5446	B-1
D5402	B-3	R5447	B-1
		R5448	B-1
FB5405	B-4	R5449	B-2
		R5452	B-2
IC5401	B-3	R5454	A-1
IC5402	C-4	R5456	A-4
IC5404	A-1	R5457	A-4
		R5458	A-4
L5401	C-2	R5460	A-1
L5402	C-3	R5471	B-4
L5403	A-2	R5472	C-2
L5404	B-1	R5473	A-2
		R5476	A-4
Q5401	C-1	R5477	A-4

VF-119 BOARD
CAMERA REC



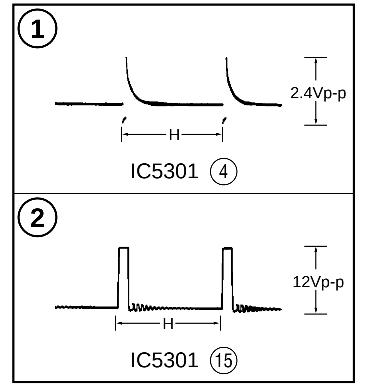

VF-119 BOARD
(COLOR EVF MODEL)
COLOR EVF
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
COLOR EVF MODEL:CCD-TR516E
IC5401
LCD DRIVER
IC5401
CXA8115R-T4
IC5402
EXP I/O
IC5402
M62376GP-65AD
IC5404
LCD TIMING
GENERATOR
IC5404
CXD2458R-T4
(10.97MHz)
CN5401 20P
TO
VF-120 BOARD
CN5301
(SEE PAGE 4-100)
TO
CF-60 BOARD
CN007
(SEE PAGE 4-71)
CN5402 16P
LCD902
COLOR
LCD
UNIT
FB5405
Q5401
D5401
D5402
09


VF-120 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO VF-119 BOARD CN5401 (SEE PAGE 4-96)
TO CF-60 BOARD CN007 (SEE PAGE 4-71)
CN5301 8P
1 HD_OUT
2 INV_CURRENT
3 EVF_3.1V
4 EVF_13.5V
5 EVF_BL_GND
6 EVF_BL_GND
7 EVF_BL_4.75V
8 EVF_BL_4.75V
R5325 XX
L5301 47uH 3225
Q5304 UN5113-TX
Q5305 UN5213-TX
Q5304,5305 B+ SWITCH
R5324 0
C5302 6.8u 20V TA B
R5305 47k ±0.5%
R5304 180k ±0.5%
C5304 0.01u B
R5307 27k
R5309 47k
R5310 56k
R5311 270k
C5303 0.022u B
R5306 68k
R5308 150k
C5312 1u B 2012
R5321 22k
R5322 470k
D5301 MA6S121-(TX)
Q5302 XX
R5302 XX
Q5303 XX
R5320 XX
R5303 XX
R5301 100
R5319 XX
D5302 1SS370(TE85L)
R5323 XX
IC5301 DC/AC CONVERTER
IC5301 MB3789PFV-G-BND-ER
GND OUT VCC2 CB
VCC 2.5V OSC SCP
C5310 150p CH
R5318 1200
C5311 0.1u B
C5313 0.22u B
Q5301 RN2305-TE85L DISCHARGE SWITCH
C5314 0.01u B
C5305 10u 10V TA A
R5312 68k
R5313 56k
C5306 2200p SL
C5301 XX
C5307 4.7u 6.3V TA A
C5308 0.022u B
R5314 270k
R5315 10k
R5316 330k
R5317 180k
C5309 0.01u B
①
②
CN5302 12P B to B
1 N.C.
2 N.C.
3 LED_A
4 FB
5 LED_K
6 BL_LOW
7 EVF_BL_GND
8 N.C.
9 DRIVE_PULSE
10 EVF_BL_4.75V
11 EVF_BL_GND
12 EVF_BL_4.75V
CN5351 12P B to B
LB-54 BOARD (COLOR EVF MODEL)
BACK LIGHT
-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
C5353 0.01u B
L5351 47uH 3225
R5351 33k
L5352 10uH 3225
T5351 INVERTER TRANS ⚠
Q5351 FX216-TL1 TRANS DRIVE
C5351 47u 10V TA C
C5352 4.7u B 3216
C5354 8200p B 2012
C5355 8200p B 2012
C5356 8200p B 2012
ND5351 BACK LIGHT ⚠
D5351 XX
LND811 A
LND812 A
09

Note:
The components identified by
mark ⚠ or dotted line with
mark ⚠ are critical for safety.
Replace only with part number
specified.

COLOR EVF MODEL:CCD-TR516E

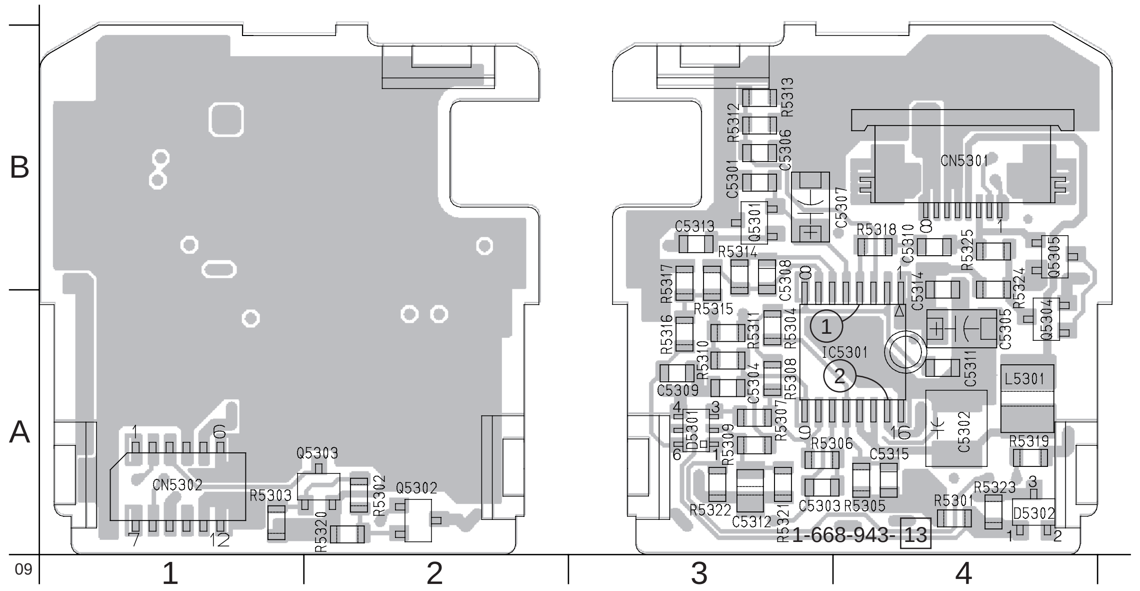
VF-120 BOARD
CAMERA REC



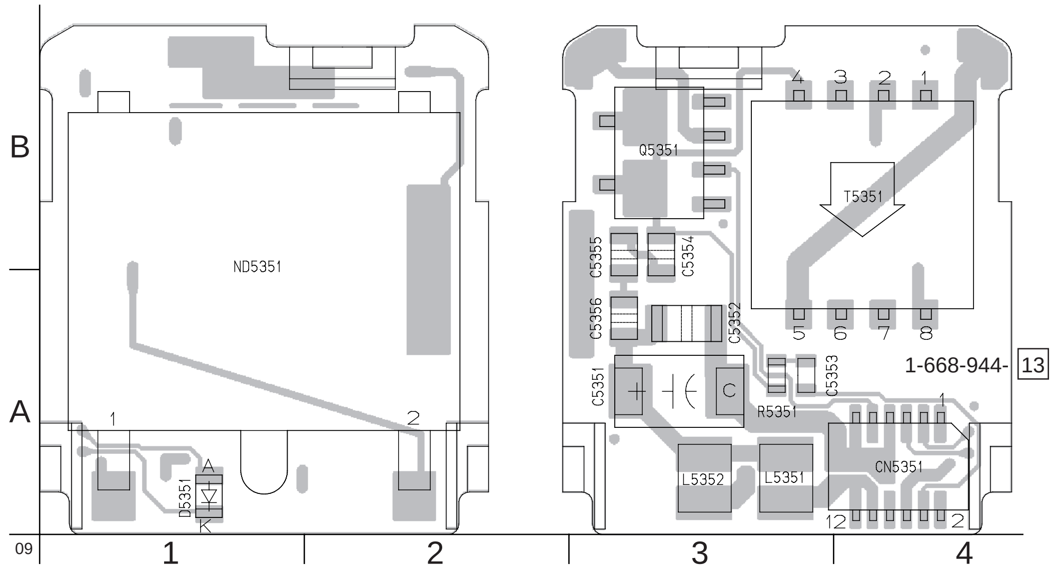
VF-120 (COLOR EVF), LB-54 (BACK LIGHT) (COLOR EVF MODEL) PRINTED WIRING BOARDS

– Ref No. VF-120 BOARD: 10,000 series, LB-54 BOARD: 10,000 series –

VF-120 BOARD (SIDE B)   VF-120 BOARD (SIDE A)


B
A
CN5302
Q5303
R5303
Q5302
R5302
CN5301
R5312
R5313
C5301
R5306
C5306
Q5301
C5307
C5313
R5314
R5318
C5310
R5325
Q5305
R5317
C5308
R5315
R5316
R5310
IC5301
C5305
Q5304
C5311
L5301
C5309
D5301
R5308
R5306
C5315
C5302
R5319
R5322
C5312
C5303
R5305
R5301
R5323
D5302
1-668-943-13
09
1
2
3
4

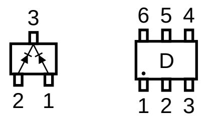
LB-54 BOARD (SIDE B)   LB-54 BOARD (SIDE A)


B
A
ND5351
D5351
Q5351
T5351
C5355
C5354
C5356
C5352
C5351
C5353
R5351
L5352
L5351
CN5351
1-668-944-13
09
1
2
3
4

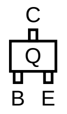
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

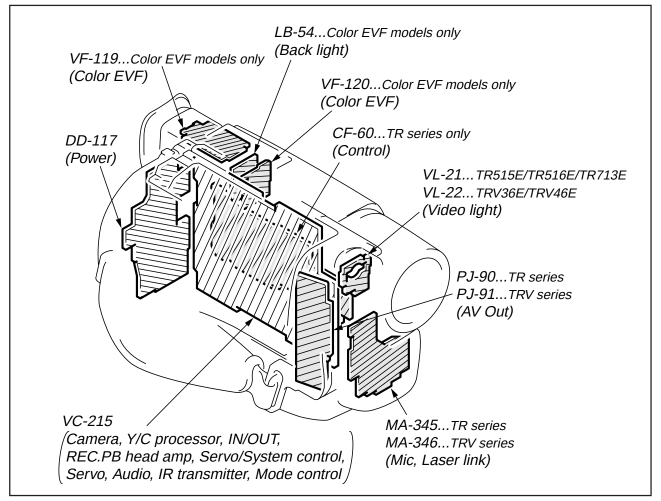
There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip diode


3
2 1
6 5 4
D
1 2 3

- Chip transistor




LB-54...Color EVF models only
(Back light)
VF-119...Color EVF models only
(Color EVF)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

VF-120 BOARD

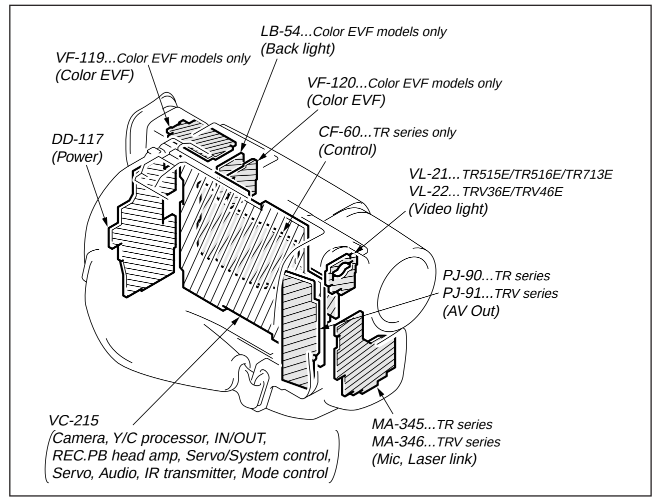
C5301	B-3	R5301	A-4
C5302	A-4	R5302	A-2
C5303	A-3	R5303	A-1
C5304	A-3	R5304	A-3
C5305	A-4	R5305	A-4
C5306	B-3	R5306	A-3
C5307	B-3	R5307	A-3
C5308	B-3	R5308	A-3
C5309	A-3	R5309	A-3
C5310	B-4	R5310	A-3
C5311	A-4	R5311	A-3
C5312	A-3	R5312	B-3
C5313	B-3	R5313	B-3
C5314	A-4	R5314	B-3
C5315	A-4	R5315	A-3
		R5316	A-3
CN5301	B-4	R5317	B-3
CN5302	A-1	R5318	B-4
		R5319	A-4
D5301	A-3	R5320	A-2
D5302	A-4	R5321	A-3
		R5322	A-3
IC5301	A-4	R5323	A-4
		R5324	A-4
L5301	A-4	R5325	B-4
Q5301	B-3		
Q5302	A-2		
Q5303	A-2		
Q5304	A-4		
Q5305	B-4		

LB-54 BOARD

C5351	A-3
C5352	A-3
C5353	A-3
C5354	B-3
C5355	B-3
C5356	A-3
CN5351	A-4
D5351	A-1
L5351	A-3
L5352	A-3
ND5351	B-1
Q5351	B-3
R5351	A-3
T5351	B-4

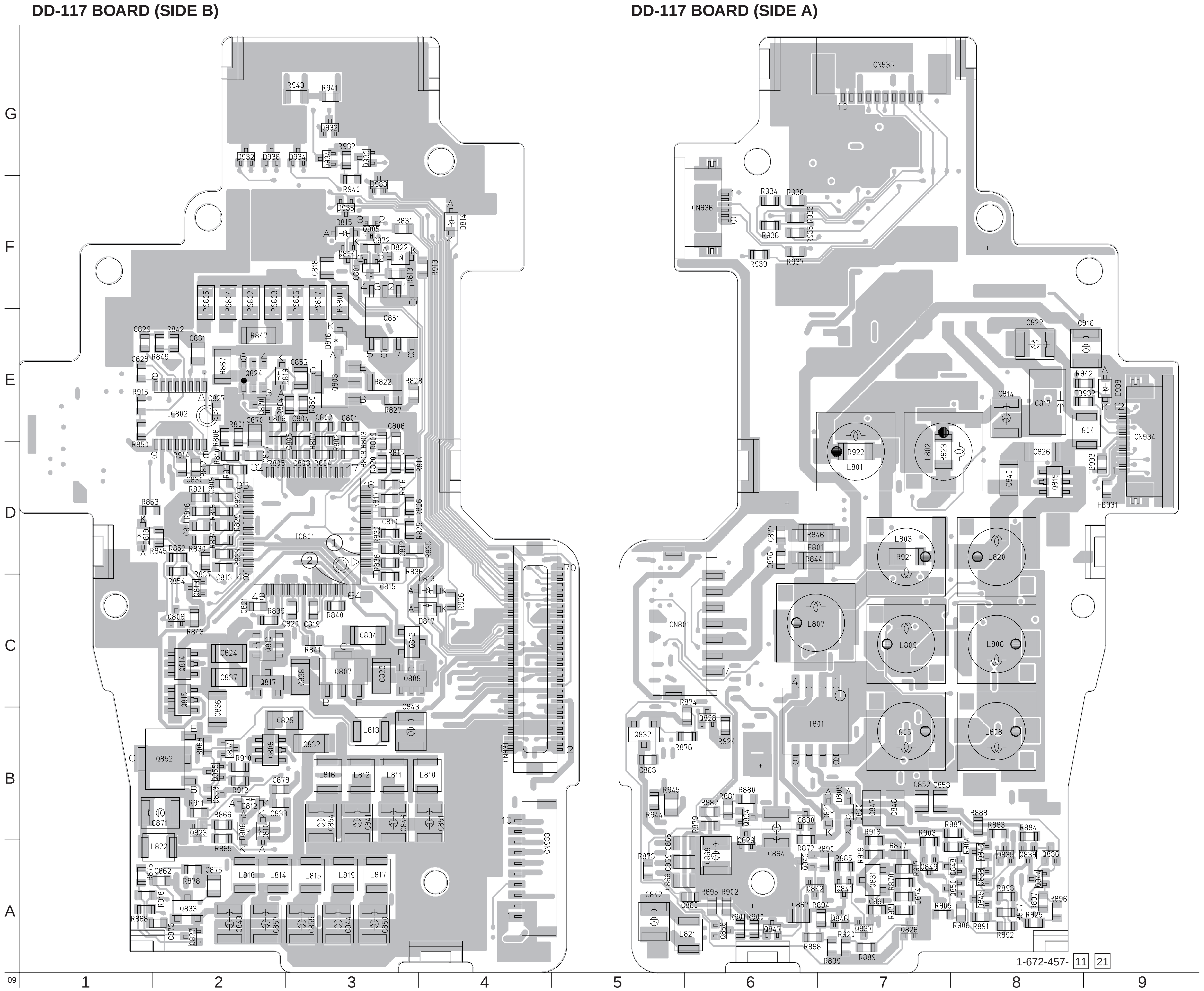
DD-117 BOARD

C801	E-3
C802	E-3
C803	D-3
C804	E-3
C805	E-2
C806	E-2
C807	D-2
C808	E-3
C809	D-2
C810	D-3
C811	D-2
C812	D-3
C813	D-2
C814	E-8
C815	C-3
C816	E-8
C817	E-8
C818	F-3
C819	C-3
C820	C-3
C821	C-2
C822	E-8
C823	C-3
C824	C-2
C825	B-2
C826	D-8
C827	E-2
C828	E-1
C829	E-1
C830	D-2
C831	E-2
C832	B-3
C833	B-2
C834	C-3
C836	B-2
C837	C-2
C838	C-3
C840	D-8
C841	B-3
C842	A-5
C843	B-3
C844	A-3
C846	B-3
C847	B-7
C848	B-7
C849	A-2
C850	A-3
C851	B-4
C852	B-7
C853	B-7
C854	B-3
C855	A-3
C856	E-3
C857	A-2
C860	A-6
C861	A-7
C862	A-2
C863	B-5
C864	B-6
C865	A-5
C866	A-5
C867	A-6
C868	A-6
C869	A-5
C870	E-2
C871	B-2
C872	F-3
C873	A-2
C874	A-7
C875	A-2
C876	D-6
C877	D-6
C878	B-2
CN801	C-5
CN931	C-4
CN933	A-4
CN934	D-9
CN935	G-7
CN936	F-6
D806	B-2
D809	B-7
D810	B-2
D812	B-2
D813	C-4
D814	F-4
D815	F-3
D816	E-3
D817	C-4
D818	D-1
D819	E-2
D820	B-7
D821	B-7
D822	F-3
D932	G-2
D933	F-3
D934	G-3
D935	F-3
D936	G-2
D938	E-9
FB931	D-9
FB932	E-8
FB933	D-9
IC802	D-3
IC802	E-2
L801	D-7
L802	D-7
L803	D-7
L804	E-9
L805	B-7
L806	C-8
L807	C-6
L808	B-8
L809	C-7
L810	B-4
L811	B-3
L812	B-3
L813	B-3
L814	A-2
L815	A-3
L816	B-3
L817	A-3
L818	A-2
L819	A-3
L820	D-8
L821	A-6
L822	A-2
LF801	D-6
PS801	F-3
PS802	F-2
PS803	F-2
PS804	F-2
PS805	F-2
PS806	F-3
PS807	F-3
Q801	F-3
Q803	E-3
Q804	F-3
Q805	F-3
Q806	C-2
Q807	C-3
Q808	C-3
Q809	B-2
Q810	C-2
Q812	C-3
Q813	C-2
Q814	C-2
Q815	C-2
Q817	C-2
Q819	D-8
Q820	E-2
Q823	B-2
Q824	E-2
Q826	A-7
Q827	A-2
Q828	B-6
Q829	A-6
Q830	B-6
Q831	A-7
Q832	B-5
Q833	A-2
Q834	B-6
Q835	A-8
Q836	A-8
Q837	A-7
Q838	A-8
Q839	A-8
Q840	A-8
Q841	A-7
Q842	A-6
Q843	A-6
Q844	A-8
Q845	A-8
Q846	A-7
Q847	A-6
Q848	A-8
Q849	A-7
Q850	A-8
Q851	E-3
Q852	B-2
Q853	B-2
Q854	B-2
Q855	B-2
Q856	A-6
Q932	G-3
Q933	G-3
Q934	G-3
R801	E-2
R802	E-3
R803	E-3
R804	D-3
R805	D-2
R806	E-2
R807	E-3
R808	D-3
R809	E-3
R810	D-2
R811	D-2
R812	D-2
R813	F-3
R814	D-3
R815	D-3
R816	D-3
R817	D-3
R818	D-2
R819	D-2
R820	D-3
R821	D-2
R822	E-3
R824	D-2
R825	D-3
R826	D-3
R827	E-3
R828	E-3
R829	C-2
R829	D-2
R830	D-2
R831	F-3
R832	D-3
R833	D-2
R834	D-2
R835	D-3
R836	D-3
R837	D-2
R838	D-3
R840	C-3
R841	C-3
R842	E-2
R843	C-2
R844	D-6
R845	D-2
R846	D-6
R847	E-2
R849	E-2
R850	E-1
R852	D-2
R853	D-1
R854	D-2
R859	E-3
R864	E-3
R865	B-2
R866	B-2
R867	E-2
R868	A-1
R870	A-7
R871	A-7
R876	B-6
R877	A-7
R878	A-2
R879	B-6
R880	B-6
R881	B-6
R882	B-6
R883	B-8
R884	B-8
R885	A-7
R887	B-8
R888	B-8
R889	A-7
R890	A-7
R891	A-8
R892	A-8
R893	A-8
R894	A-7
R895	A-6
R896	A-8
R897	A-8
R898	A-6
R899	A-7
R900	A-6
R901	A-6
R902	A-6
R903	A-7
R904	A-8
R905	A-7
R906	A-8
R907	A-8
R908	B-2
R910	B-2
R911	B-2
R912	B-2
R913	F-4
R914	D-2
R915	E-1
R916	A-7
R917	A-7
R918	A-1
R919	A-7
R920	A-7
R921	D-7
R922	D-7
R923	D-7
R924	B-6
R925	A-8
R926	C-4
R932	G-3
R933	F-6
R934	F-6
R935	F-6
R936	F-6
R937	F-6
R938	F-6
R939	F-6
R940	F-3
R941	G-3
R942	E-8
R943	G-3
R944	B-5
R945	B-5
T801	B-6


VF-119...Color EVF models only
(Color EVF)
LB-54...Color EVF models only
(Back light)
VF-120...Color EVF models only
(Color EVF)
DD-117
(Power)
CF-60...TR series only
(Control)
VL-21...TR515E/TR516E/TR713E
VL-22...TRV36E/TRV46E
(Video light)
PJ-90...TR series
PJ-91...TRV series
(AV Out)
VC-215
(Camera, Y/C processor, IN/OUT,
REC.PB head amp, Servo/System control,
Servo, Audio, IR transmitter, Mode control)
MA-345...TR series
MA-346...TRV series
(Mic, Laser link)

DD-117 (POWER) PRINTED WIRING BOARD

– Ref No. DD-117 BOARD: 2,000 series –



DD-117 BOARD (SIDE B)

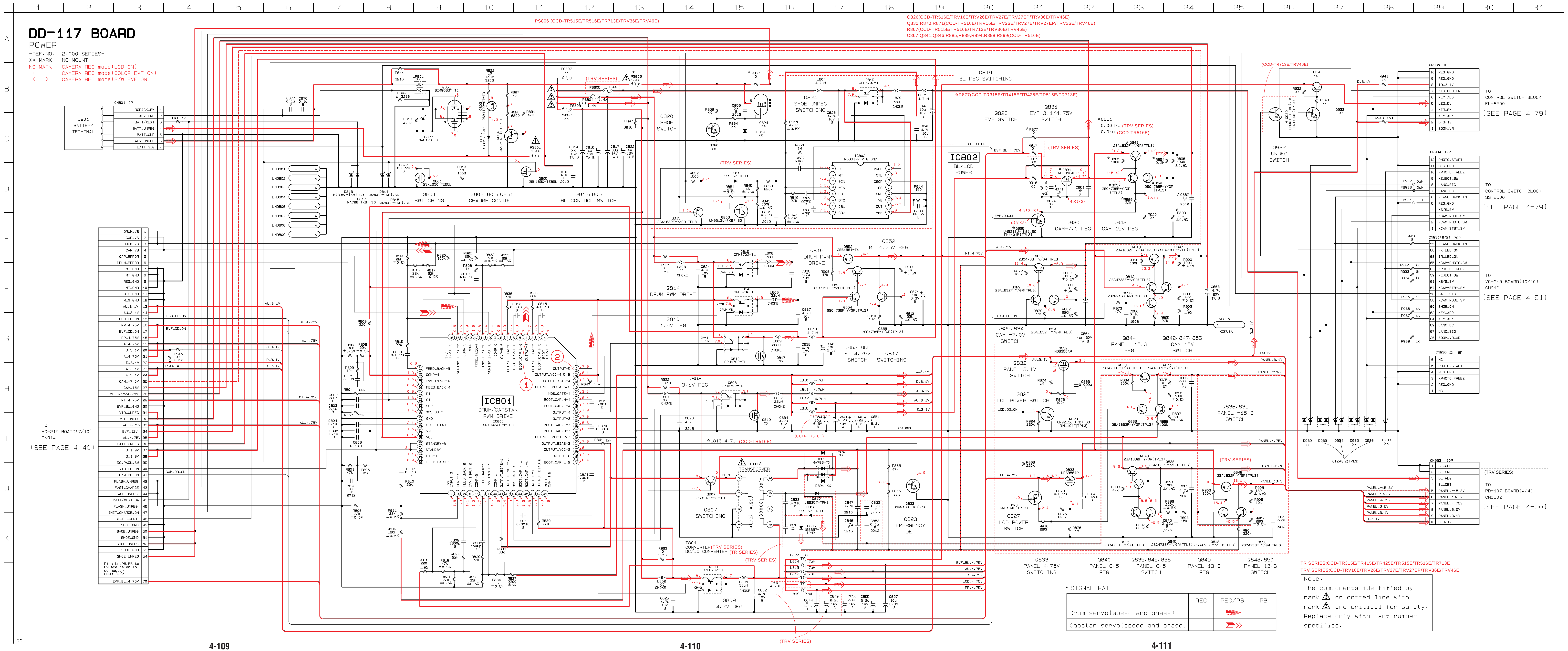
DD-117 BOARD (SIDE A)

G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
09
IC801
IC802
CN801
CN933
CN934
CN935
CN936
T801
L801
L802
L803
L804
L805
L806
L807
L808
L809
L820
L821
L822
1-672-457- 11 21

DD-117 BOARD

POWER

-REF.NO. : 2,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode(LCD ON)
( ) : CAMERA REC mode(COLOR EVF ON)
< > : CAMERA REC mode(B/W EVF ON)



J901 BATTERY TERMINAL
CN801 7P
IC801 DRUM/CAPSTAN PWM DRIVE SN104241PM-TEB
IC802 BL/LCD POWER
PS806 (CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q826(CCD-TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q831,R870,R871(CCD-TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R867(CCD-TR515E/TR516E/TR713E/TRV36E/TRV46E)
C867,Q841,Q846,R885,R889,R894,R898,R899(CCD-TR516E)
Q801 SWITCHING
Q803・805・851 CHARGE CONTROL
Q813・806 BL CONTROL SWITCH
Q820 SHOE SWITCH
Q824 SHOE UNREG SWITCHING
Q819 BL REG SWITCHING
Q826 EVF SWITCH
Q831 EVF 3.1/4.75V SWITCH
Q832 UNREG SWITCH
Q830 CAM-7.0 REG
Q843 CAM 15V REG
Q815 DRUM PWM DRIVE
Q814 DRUM PWM DRIVE
Q852 MT 4.75V REG
Q810 1.9V REG
Q853-855 MT 4.75V SWITCH
Q817 SWITCHING
Q829・834 CAM -7.0V SWITCH
Q844 PANEL -15.3 REG
Q842・847・856 CAM 15V SWITCH
Q808 3.1V REG
Q832 PANEL 3.1V SWITCH
Q828 LCD POWER SWITCH
Q836・839 PANEL -15.3 SWITCH
Q807 SWITCHING
T801 CONVERTER(TRV SERIES) DC/DC CONVERTER (TR SERIES)
Q823 EMERGENCY DET
Q827 LCD POWER SWITCH
Q809 4.7V REG
Q833 PANEL 4.75V SWITCHING
Q840 PANEL 6.5 REG
Q835・845・838 PANEL 6.5 SWITCH
Q849 PANEL 13.3 REG
Q848・850 PANEL 13.3 SWITCH
TO VC-215 BOARD(7/10) CN914 (SEE PAGE 4-40)
TO CONTROL SWITCH BLOCK FK-8500 (SEE PAGE 4-79)
TO CONTROL SWITCH BLOCK SS-8500 (SEE PAGE 4-79)
TO VC-215 BOARD(10/10) CN912 (SEE PAGE 4-51)
(TRV SERIES) TO PD-107 BOARD(4/4) CN5802 (SEE PAGE 4-90)
CN935 10P
CN934 12P
CN933 12P
CN936 6P
CN932 10P
(TRV SERIES)
(CCD-TR516E)
(CCD-TR713E/TRV46E)

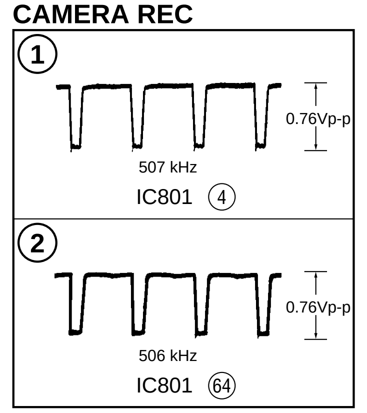
TR SERIES:CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV SERIES:CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		➤➤	
Capstan servo(speed and phase)		➤»»	

DD-117 BOARD
CAMERA REC



SECTION 5
ADJUSTMENTS

Refer to page 3 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Color monitor
- Regulated power supply
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color bar chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly) (Note 1)	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Multi CPC jig	J-6082-311-A	For adjusting LCD block
J-8	CPC-7 jig	J-6082-382-A	For adjusting the video section and color viewfinder adjustment
J-9	Power code (Note 2)	J-6082-223-A	For connecting the battery terminal and DC power supply
J-10	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-11	Clear chart	J-6080-621-A	
J-12	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-210/211 board (CN401) and VC-215 board (CN501)
J-13	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-14	Extension cable (70P, 0.8 mm)	J-6082-439-A	For extension between the DD-117 board (CN931) and VC-215 board (CN915)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc.

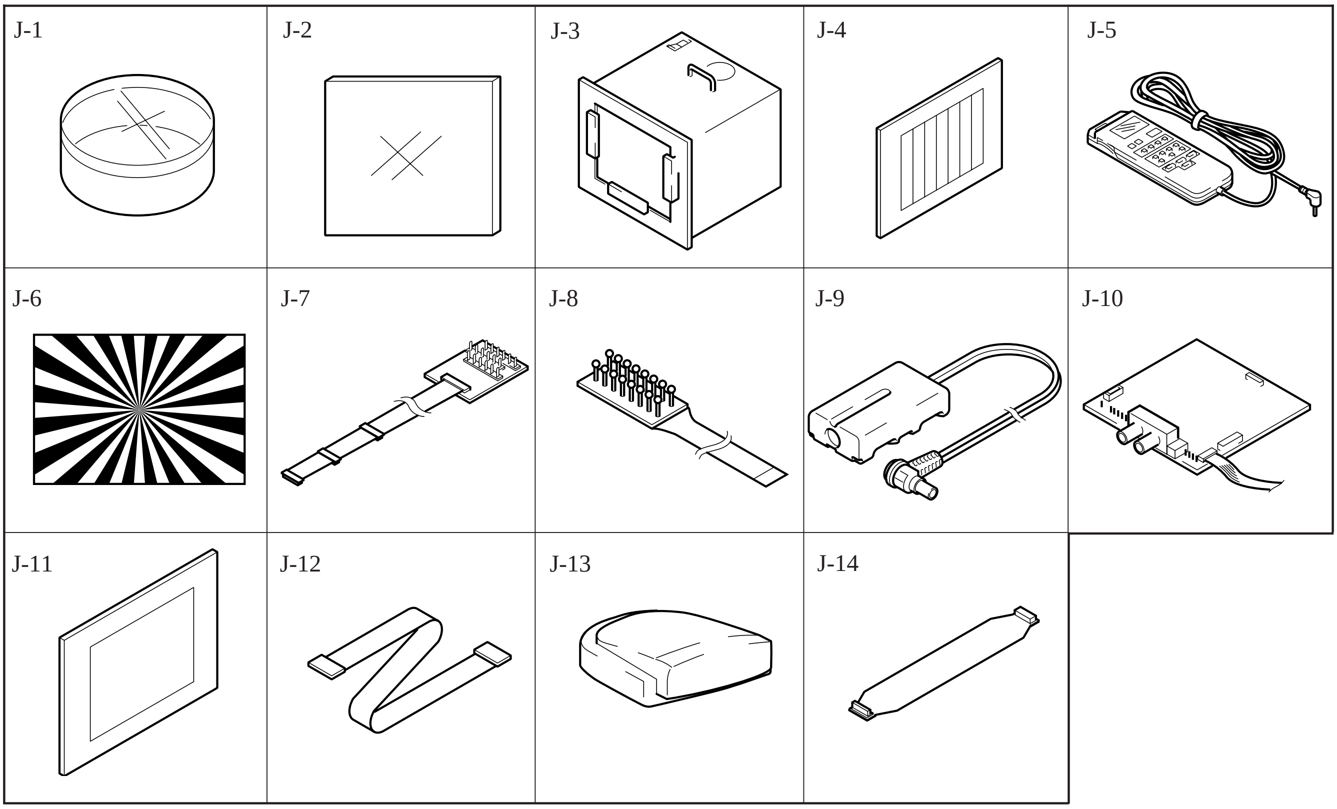


Fig. 5-1-1.

1-1-2. Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjusting item	Replacing parts																							
		Lens device	CD-210/211 board IC1401 (CCD imager)	SE-80/81 board SE451 (Pitch sensor)	SE-80/81 board SE452 (Yaw sensor)	VC-215 board IC202 (Y C process)	VC-215 board IC151 (Y, C IN/OUT)	VC-215 board IC001 (REC/PB AMP)	VC-215 board IC751 (IR transmitter)	VC-215 board IC301 (AFM process)	VC-215 board IC501 (Timing generator)	VC-215 board IC502 (S/H, AGC)	VC-215 board IC401 (EEPROM)	Mechanism deck M901 (Drum assembly)	Mechanism deck M902 (Capstan motor)	VF-99 board IC901 (CRT driver)	VF-99 board T901/T902 (FBT)	EVF block V901 (Picture tube)	PD-107 board IC5502 (LCD driver)	PD-107 board IC5601 (Timing generator)	LCD block ND901 (Fluorescent tube)	LCD block LCD901 (LCD panel)	VF-119 board IC5404 (LCD timing genrator)	VF-119 board IC5401 (LCD driver)	LB-54 board T5351 (INVERTER TRANS)
	Initialization of D, E, F page data												●												
Camera	G-CAM flip adj.	●	●										●												
Camera	HALL adj.	●											●												
Camera	Flange back adj.	●	●										●												
Camera	Color reproduction adj.		●									●	●												
Camera	IRIS IN/OUT adj.	●	●									●	●												
Camera	MAX GAIN adj.		●									●	●												
Camera	Auto white balance standard data input		●									●	●												
Camera	Auto white balance adj.		●									●	●												
Camera	Angular velocity sensor sensitivity check			●	●								●												
EVF (color)	EVF initial data input												●												
EVF (color)	VCO adj.												●										●		
EVF (color)	Bright adj.												●											●	
EVF (color)	Contrast adj.												●											●	
EVF (color)	Backlight consumption current adj.												●												●
EVF (color)	White balance adj.												●											●	
EVF (B/W)	Centering adj.																●	●							
EVF (B/W)	Focus adj.																●	●							
EVF (B/W)	Aberration adj.																●	●							
EVF (B/W)	Horizontal amplitude adj.															●	●	●							
EVF (B/W)	Vertical amplitude adj.															●	●	●							
EVF (B/W)	Brightness adj.																●	●							
LCD	LCD initial data input												●												
LCD	VCO adj.												●							●					
LCD	D range adj.												●						●						
LCD	Bright adj.												●						●						
LCD	Contrast adj.												●						●						
LCD	V-COM adj.												●						●						
LCD	Color adj.												●						●						
LCD	V-COM adj.												●						●			●			
LCD	White balance adj.												●						●		●	●			
System Control	Battery end adj.												●	●	●										
Servo	CAP FG offset adj.												●		●										
Servo	RF switching position adj.												●	●											
Video	28MHz origin oscillation adj.										●		●												
Video	AFC f_0 adj.					●							●												
Video	Filter f_0 adj.						●						●												
Video	Y OUT level adj.					●	●						●												
Video	C OUT level adj.					●	●						●												
Video	RP filter f_0 adj.							●					●												
Video	REC Y current adj. (Hi8/Standard 8)					●		●					●												
Video	REC L current adj. (Hi8/Standard 8)					●		●					●												
Video	REC C current adj.					●		●					●												
IR	IR video carrier frequency adj.								●				●												
IR	IR video deviation adj.								●				●												
IR	IR audio deviation adj.								●				●												
Audio	1.5MHz deviation adj.									●			●												
Audio	BPF f_0 adj.									●			●												
Mechanism	Tape path adj.													●	●										

1-1-3. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-3, 4.
2) By setting the "Forced Camera Power ON mode", the camera power can be turned ON even if the front panel block (MA-345/346 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
    1. VC-215 board CN903 (18P 0.5mm)
3) The video light model need not be assembled. If removing it. disconnect the following connector.
    1. VC-215 board CN909 (4P 0.8mm)

Note 3: As removing the cabinet (R) (removing the VC-215 board CN911) means removing the lithium 3V power supply (CF-60/61 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history use.)

Note 4: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

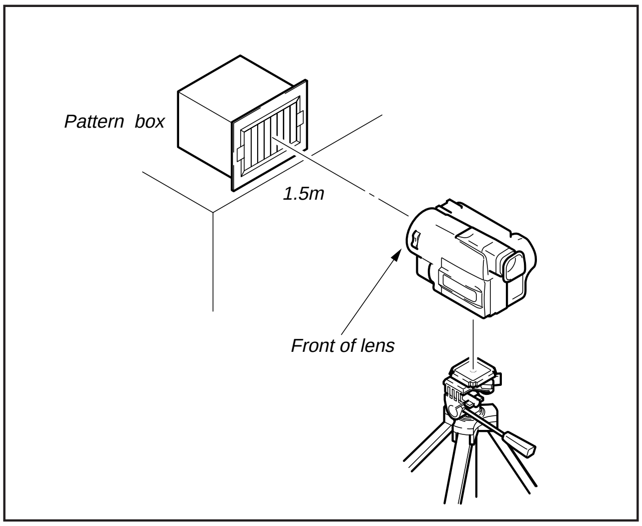
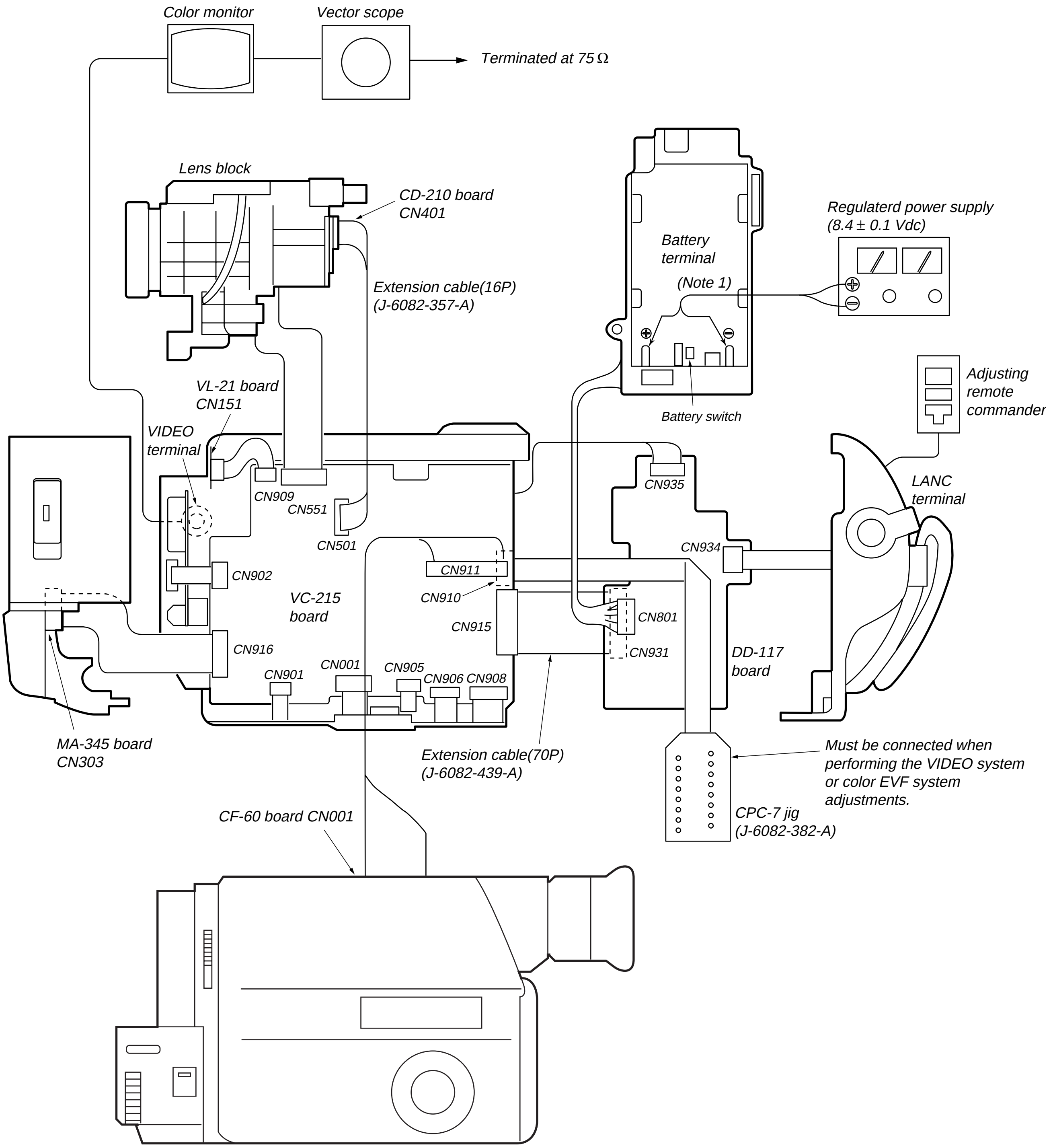


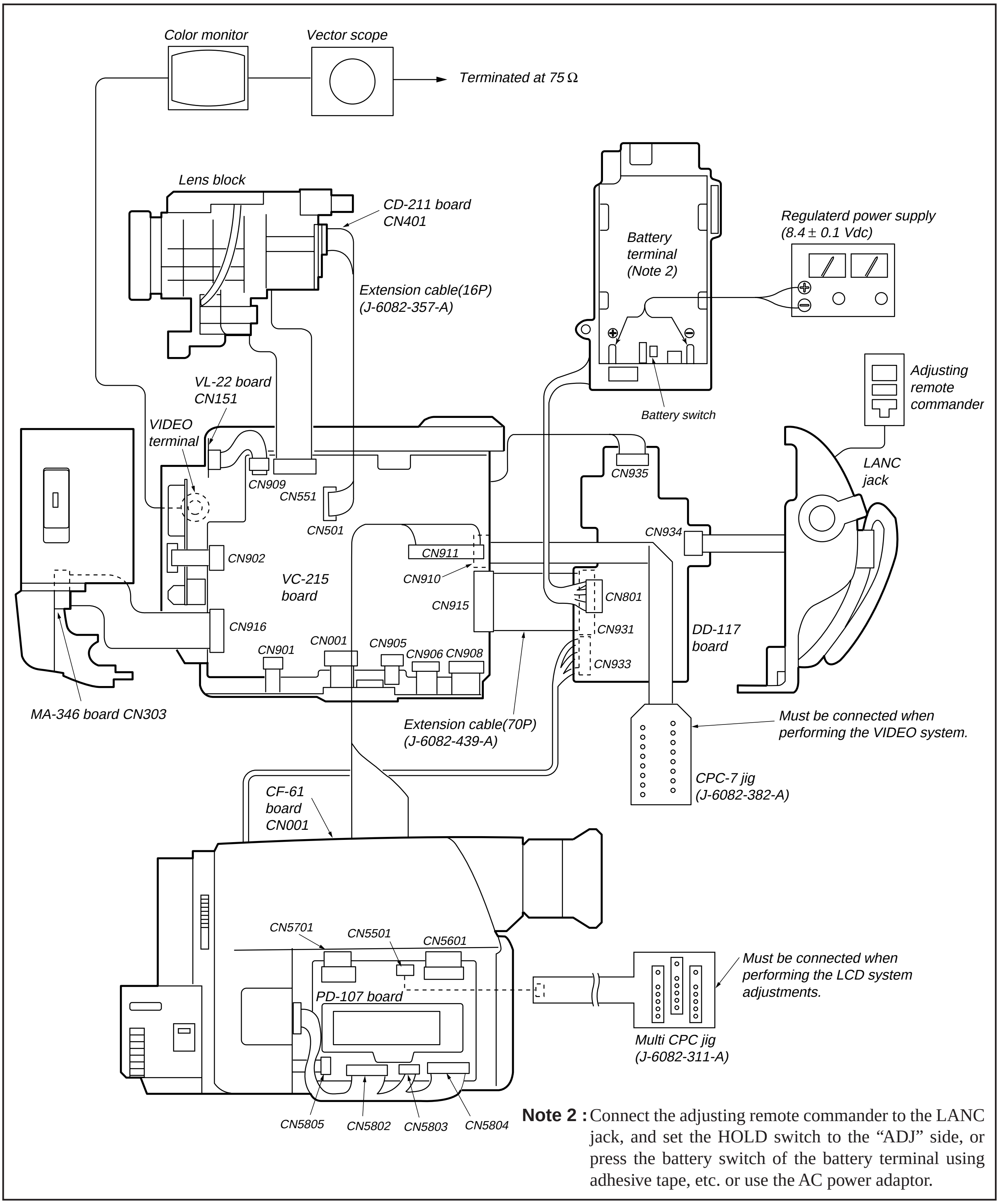
Fig. 5-1-2.


Color monitor
Vector scope
Terminated at 75 Ω
Lens block
CD-210 board
CN401
Extension cable(16P)
(J-6082-357-A)
Battery
terminal
(Note 1)
Regulaterd power supply
(8.4 ± 0.1 Vdc)
Battery switch
Adjusting
remote
commander
VL-21 board
CN151
VIDEO
terminal
CN909
CN551
CN501
CN935
LANC
terminal
CN934
CN902
CN911
CN910
VC-215
board
CN915
CN801
CN931
DD-117
board
CN916
CN901
CN001
CN905
CN906
CN908
MA-345 board
CN303
Extension cable(70P)
(J-6082-439-A)
Must be connected when
performing the VIDEO system
or color EVF system
adjustments.
CPC-7 jig
(J-6082-382-A)
CF-60 board CN001

Note 1: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side, or press the battery switch of the battery terminal using adhesive tape, etc. or use the AC power adaptor.

Fig. 5-1-3.

TRV SERIES


Color monitor
Vector scope
Terminated at 75 Ω
Lens block
CD-211 board
CN401
Extension cable(16P)
(J-6082-357-A)
Battery
terminal
(Note 2)
Regulaterd power supply
(8.4 ± 0.1 Vdc)
Battery switch
Adjusting
remote
commander
LANC
jack
VL-22 board
CN151
VIDEO
terminal
CN909
CN551
CN501
CN935
CN934
CN902
CN911
VC-215
board
CN910
CN915
CN801
CN916
CN931
DD-117
board
CN001
CN905
CN901
CN906 CN908
CN933
MA-346 board CN303
Extension cable(70P)
(J-6082-439-A)
Must be connected when
performing the VIDEO system.
CPC-7 jig
(J-6082-382-A)
CF-61
board
CN001
CN5701
CN5501
CN5601
PD-107 board
Must be connected when
performing the LCD system
adjustments.
Multi CPC jig
(J-6082-311-A)
CN5805
CN5802
CN5803
CN5804

Note 2 : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc. or use the AC power adaptor.

Fig. 5-1-4.

1-1-4. Precaution

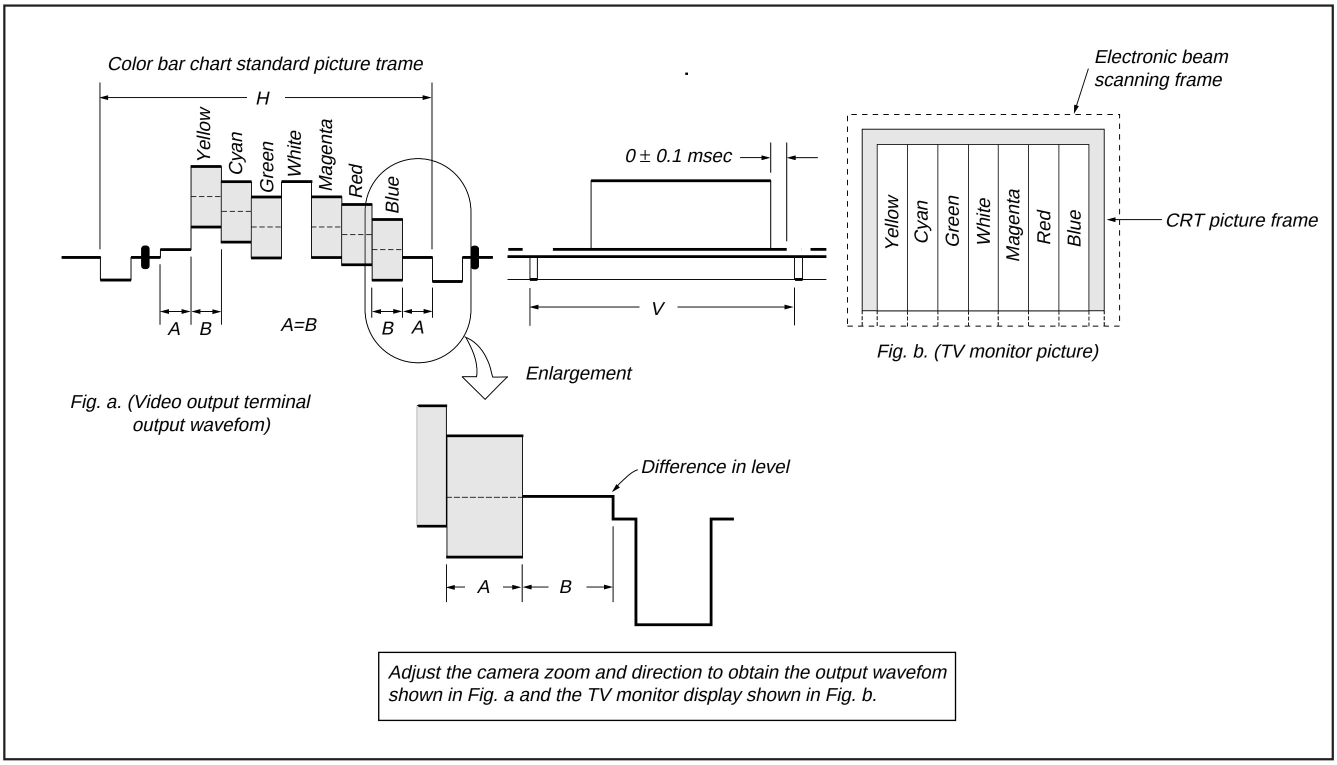
1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (MA-345/346 board) .... CAMERA
2. NIGHT SHOT switch (Lens Block) .... OFF
3. DEMO MODE (Menu display) .... OFF
4. DIGITAL ZOOM (Menu display) .... OFF
5. STEADY SHOT (Menu display) .... OFF (TR713E/TRV46E)
6. DISPLAY (Menu display) .... V-OUT/LCD
7. FOCUS switch (MF-8500) .... MANUAL
8. PROGRAM AE (CF-60/61 board) .... Auto
9. BACK LIGHT (CF-60/61 board) .... OFF
10. PICTURE EFECT (CF-60/61 board) .... OFF
11. 16 : 9 WIDE (Menu display) .... OFF

2. Adjusting Procedure

Adjust in the given order.


Color bar chart standard picture trame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
Fig. a. (Video output terminal output wavefom)
0 ± 0.1 msec
V
Enlargement
Difference in level
A
B
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
Fig. b. (TV monitor picture)

Adjust the camera zoom and direction to obtain the output wavefom shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 5-1-5.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-5. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-6.

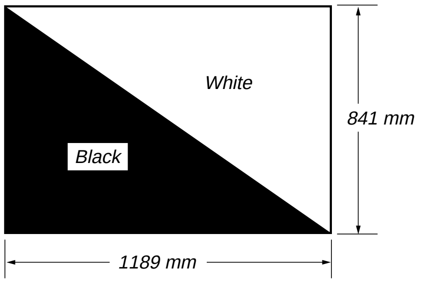

White
Black
841 mm
1189 mm

Fig. 5-1-6.

Note : Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-5. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-7.

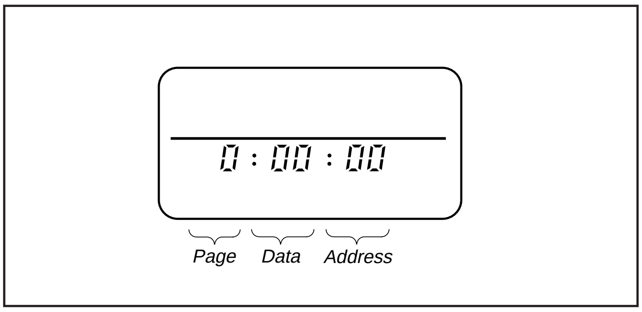


Fig. 5-1-7.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② ↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote commander display.

(Example) In the case that the DDS display and the adjusting remote commander display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection “189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-2.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initializing the D,E,F Page Data

Note 1: If "Initializing the D, E, F Page Data" is performed, all data of the D page, E page and F page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D,E,F page data has been initialized, "Modification of D, E, F Page Data" and all adjustments need to be performed again.

Adjusting page	D
Adjusting Address	00 to 6F
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 00, and set data: 51.
3) Select page: 2, address: 01, set data: 51 and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 02, and check that the data is 01.
5) Select page: 3, address: 00, and set data: 29.
6) Select page: 3, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.
8) Perform "Modification of D,E,F Page Data".

2. Modification of D, E, F Page Data

If the D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note : If copy the data built in the different model, the camcorder may not operate.

3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the inital value.
5) After compleating "Modification of D, E, F Paga Data" select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3. D Page Table

Note1 :

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Address	Initial Value	Remark
00 to 0F		
10	00	Fixed data-1
11	00	
12	00	
13		Fixed data-2 (Modified data, copy the data built in the same model.)
14		
15		
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
2A	00	Fixed data-1
2B	00	
2C	00	
2D	00	
2E	12	
2F	50	
30	88	Battery end adj.
31	8D	
32	A8	
33	BD	
34	C8	
35	05	Fixed data-1
36	02	
37	01	
38	05	
39		Fixed data-2 (Modified data, copy the data built in the same model.)
3A		
3B		
3C		
3D	07	Fixed data-1
3E		Fixed data-2 (Modified data, copy the data built in the same model.)
3F		
40		
41		
42	04	Fixed data-1
43		Fixed data-2
44	06	Fixed data-1
45	77	
46		Fixed data-2
47	8F	Fixed data-1
48	06	
49	05	
4A	03	

Address	Initial Value	Remark
4B	01	Fixed data-1
4C	00	
4D	00	
4E	00	
4F	00	
50	0E	
51	2A	
52	47	
53	69	
54	91	
55	BF	
56	EB	
57	FF	
58	E2	
59	B2	
5A	7F	
5B	4D	
5C	11	
5D	00	
5E	00	
5F	00	
60	2D	
61	10	
62	1E	
63	19	
64	00	
65	00	
66	00	
67	00	
68	00	
69	00	
6A	00	
6B	00	
6C	00	
6D	00	
6E	00	
6F	00	

4. F Page table

Note 1:

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Note 2 : There are three models classified by VTR formats as shown below, and the initial value of adjustment is different according to the model.

Hi8 model : CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E
Standard8 model : CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP

Address	Initial Value	Remark
00 to 0F		
10	00	Emergency memory address
11	00	
12	00	
13	00	
14	00	
15	00	
16	00	
17	00	
18	00	
19	00	
1A	00	
1B	00	
1C		Fixed data-2
1D		
1E		
1F		
20		
21	50	G-CAM flip adj.
22		Fixed data-2
23		
24		Fixed data-1
25		
26		Fixed data-2
27		Fixed data-1
28		
29		
2A		
2B		Fixed data-2
2C	A0	28MHz origin osc. adj.
2D		Fixed data-2
2E		Fixed data-1
2F	80	Hall adj.
30	80	
31	18	Max gain adj.
32		Fixed data-2
33		Fixed data-1
34	1B	Color reproduction adj.
35		Fixed data-1
36	42	Color reproduction adj.
37		Fixed data-1
38		
39		
3A	89	Auto white balance adj.
3B	59	
3C	38	IRIS IN/OUT adj.
3D	41	
3E	25	Flange back adj.
3F	00	
40	19	
41	00	
42	35	
43	78	Angular velocity sensor sensitivity check. Address 43, 44 are fixed data-2 address. (CCD-TR713E/TRV46E)
44	6C	
45		Fixed data-1
46	8D	1.5MHz deviation adj.
47	7A	BPF f0 adj.
48		Fixed data-1
49	6B	Y OUT level adj.
4A	40	AFC f0 adj.
4B	9A	C OUT level adj.
4C		Fixed data-1
4D	7B	Filter f0 adj.
4E	60	RP filter f0 adj.
4F		Fixed data-1
50		
51		
52		
53	40	REC Y current adj.
54	40	(Addresses 57 to5A are fixed data-2 addresses.)
55	40	
56	40	
57	A1/80	Note 2 : Hi8 model/ Standard8 model
58	95/80	
59	A1/80	
5A	95/80	
5B	50	REC L level adj.
5C	50	(Addresses 63 to 64 are fixed data-2 addresses.)
5D	50	
5E	50	
5F	66	
60	66	
61	66	
62	66	
63	7A/80	Note 2 : Hi8 model/ Standard8 model
64	7A/80	
65	80	REC C current adj.
66	41	IR video deviation Adj.
67	33	IR audio deviation Adj.
68	C7	IR video carrier freq. Adj.
69	80	CAP FG offset adj.
6A		Fixed data-2
6B		Fixed data-1
6C		
6D		
6E		
6F		
70	3B	AWB standard data input adj.
71	FF	
72	56	
73	7D	
74		Fixed data-1
75		
76	1B	Flange back adj.
77	54	
78	25	
79	80	
7A	10	
7B	FF	
7C	0A	Switching position adj.
7D	00	
7E		Fixed data-1
7F		
80		Fixed data-2
81		
82		Fixed data-1
83		

Address	Initial Value	Remark
84		Fixed data-2
85		Fixed data-1: CCD-TR315E/TR415E/TR425E/TR515E/TR516E CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E Fixed data-2: CCD-TR713E, CCD-TRV46E
86		Fixed data-2
87		Fixed data-1
88		
89		
8A		
8B		
8C		Fixed data-2
8D		Fixed data-1
8E		Fixed data-2
8F		Fixed data-1
90		
91		
92		
93		
94		Fixed data-2
95		Fixed data-1
96		
97		
98		
99		
9A		
9B		
9C		Fixed data-2
9D		Fixed data-1
9E		
9F		
A0		
A1		
A2		Fixed data-2
A3		
A4		
A5		Fixed data-1
A6		Fixed data-2
A7		
A8		
A9		
AA		Fixed data-1
AB		
AC		
AD		
AE		
AF		
B0		
B1		
B2		
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA		
BB		
BC		
BD		
BE		Fixed data-2
BF		

Address	Initial Value	Remark
C0		Fixed data-1
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
C9		Fixed data-2
CA		Fixed data-1
CB		
CC		
CD		
CE		
CF		
D0		
D1		
D2		
D3		
D4		
D5		
D6		
D7		
D8		
D9		Fixed data-2
DA		Fixed data-1
DB		Fixed data-2
DC		
DD		Fixed data-1
DE		
DF		
E0		
E1		
E2		
E3		Fixed data-2
E4		
E5		Fixed data-1
E6		Fixed data-2
E7		Fixed data-1
E8		
E9		
EA		
EB		Fixed data-2
EC		
ED		Fixed data-1
EE		
EF		
F0		
F1		
F2		Fixed data-2
F3		Fixed data-1
F4		
F5	FF	Color reproduction adj.
F6	F4	
F7		Fixed data-1
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

5. E Page Table

Note 1:

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Note 2: See “1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT”.

Note 3: See “1-5. LCD SYSTEM ADJUSTMENT”.

Note 4: TR series: CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
TRV series: CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

Address	Initial Value	Remark
00		Fixed data-1
01		
02		
03		
04		
05		
06		
07		
08		
09		
0A		Fixed data-2
0B		
0C		Fixed data-1
0D		
0E		
0F		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		Fixed data-2
21		Fixed data-1
22		
23		
24		
25		
26		
27		
28		
29		
2A		
2B		Fixed data-2
2C		
2D		
2E		
2F		Fixed data-1
30		
31		
32		Fixed data-1
33		
34		
35		
36		
37		
38		
39		
3A		
3B		Fixed data-2
3C		Fixed data-1
3D		
3E		
3F		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		Fixed data-2
50		Fixed data-1
51		
52		
53		
54		Fixed data-2
55		Fixed data-1
56		
57		
58		
59		Fixed data-2
5A		Fixed data-1
5B		
5C		Fixed data-2
5D		Fixed data-1
5E		
5F		
60		Fixed data-2
61		
62		
63		
64		
65		
66		
67		
68		Fixed data-1
69		
6A		
6B		Fixed data-2
6C		
6D		Fixed data-1
6E		Fixed data-2
6F		
70		

Address	Initial Value	Remark
71		TR series:Fixed data-1/TRV series:Fixed data-2
72		Fixed data-1
73		Fixed data-2
74		Fixed data-1
75		Fixed data-2
76 to 99		Fixed data-1
9A		Fixed data-2
9B		Fixed data-1
9C		Fixed data-2
9D		Fixed data-1
9E		
9F		
A0		Fixed data-2
A1		
A2		TR series:Fixed data-1/TRV series:Fixed data-2
A3		Fixed data-1
A4		
A5		
A6		
A7		
A8		
A9		
AA		
AB		
AC		
AD		
AE		
AF		
B0		
B1		
B2		
B3		
B4		TR series:Fixed data-1/TRV series:Fixed data-2
B5		
B6		
B7		
B8		
B9		
BA		Fixed data-2
BB		Fixed data-1
BC		Fixed data-2
BD		
BE		
BF		TR series : Fixed data-1 TRV series : Fixed data-2
C0		
C1		
C2	Note 2	VCO adj. (Color EVF)
C3	Note 2	Bright adj. (Color EVF)
C4	Note 2	Contrast adj. (Color EVF)
C5	Note 2	White balance adj. (Color EVF)
C6	Note 2	White balance adj. (Color EVF)
C7		Fixed data-1 Fixed data-2 : CCD-TR516E (COLOR EVF MODEL)
C8		
C9		
CA		
CB		
CC	Note 2	Backlight consumption current adj. (Color EVF)
CD		Fixed data-1
CE		
CF	Note 3	Bright adj. (LCD)
D0	Note 3	Color adj. (LCD)
D1	Note 3	White balance adj. (LCD)
D2	Note 3	White balance adj. (LCD)

Address	Initial Value	Remark
D3	Note 3	Contrast adj. (LCD)
D4	Note 3	D range adj. (LCD)
D5	Note 3	V-COM level adj. (LCD)
D6	Note 3	VCO adj. (LCD)
D7	Note 3	V-COM adj. (LCD)
D8		Fixed data-1
D9		
DA		
DB		TR series:Fixed data-1/TRV series:Fixed data-2
DC		Fixed data-1
DD		
DE		
DF		
E0		
E1		
E2		
E3		
E4		
E5		
E6		
E7		
E8		
E9		
EA		Fixed data-2
EB		
EC		Fixed data-1
ED		
EE		
EF		Fixed data-2
F0		Fixed data-1
F1		
F2		
F3		
F4		
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC to FF		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, Check that the specified value of “28MHz Origin Oscillation Adjustment”, “Y OUT level Adjustment” and “C OUT level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

1. G-CAM flip Adjustment

Set the color reproduction conditions to optimum.

Subject	Color bar chart standard picture frame
Measurement Point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	21

Note 1. Displayed data of page 1 of the adjusting remote commander.

$$1 : \underbrace{\underline{XX}}_{\rightarrow S1} : \underbrace{\underline{XX}}_{\rightarrow S2}$$

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 16.
3) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-digits display data.
   When S1<S2
   Perform steps 4) onwards.
   When S1≧S2
   Perform steps “Processing after Completing Adjustments”.
4) Select page: F, address: 21, set data:
   when the read data is 50, change to D0, and the read data is D0, change to 50, (initial value is 52) and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	DDS display data of LCD or TV monitor (Note 3)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	2F, 30
Specified Value	7E to 82 during IRIS OPEN (Note 1) 13 to 17 during IRIS CLOSE (Note 2)

Note 1: Select page: 2, address: 01, set data: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Select page: 2, address: 01, set data: 03, and press the PAUSE button of the adjusting remote commander.

Note 3: DDS display data of LCD or TV monitor.

00 00XX
→ Object data

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 03.
3) Select page: D, address: 11, set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
5) Select page: F, address: 30, set data: 80, and press the PAUSE button.
6) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the LCD display or the TV monitor), and this data is named K_2.
8) Select page: F, address: 2F, set data: 30, and press the PAUSE button.
9) Read the DDS display data, and this data is named K_1.
10) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
11) Read the DDS display data, and this data is named W_1.
12) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
13) Read the DDS display data, and this data is named W_2.
14) Convert W_1, W_2, K_1, K_2, to decimal notation, and obtain W_1' , W_2' , K_1' , K_2'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table”.)
15) Calculate X_1' using the following equations (decimal notation calculation).
    $A' = W_2' + K_1' - W_1' - K_2'$ Equation 1
    $B' = W_1' - K_1'$ Equation 2
    $X_1' = [1696 + (48 \times A') - (16 \times B')] / A'$ Equation 3
16) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
17) Select page: F, address: 2F, set data: X_1, and press the PAUSE button.
18) Select page: 2, address: 01, and set data: 01, and press the PAUSE button.
19) Select page: F, address: 30, change the data and adjust the DDS display data to “80”.
20) Press the PAUSE button of the adjusting remote commander.
21) Select page: 2, address: 01, and set data: 03, and press the PAUSE button.
22) Read the DDS display data, and this data is named K_0. If K_0 lies within the “13” to “17” range, perform “Processing after completing adjustments”. If it is lies outside the range, perform the following adjustments.
23) Convert K_0 to decimal notation, and obtain K_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).
    $C' = 128 - B' - K_0'$ Equation 4
    $X_2' = [(106 - B') \times (X_1' - 48) + (48 \times C')] / C'$ Equation 5
    (X_1' and B' are values obtained from equations 2) and 3))
25) Convert X_2' to hexadecimal notation, and obtain X_2.
    (Round off to one decimal place)
26) Select page: F, address: 2F, set data: X_2, and press the PAUSE button.
27) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
28) Select page: F, address: 30, change the data and adjust the DDS display data to “15”.
29) Press the PAUSE button of the adjusting remote commander.
30) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
31) Check the DDS display data lies within the “7E” to “82” range.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button.
4) Select page: 0, address: 03, and set data: 00.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment(1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 230 ± 30 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Select page: 0, address: 01, and set data: 01.
3) Check that the data of page: F, address: 3E to 42, 76 to 7B is the initial value (See table below).

Address	Data	Address	Data
3E	25	77	54
3F	00	78	25
40	19	79	80
41	00	7A	10
42	35	7B	FF
76	1B		

4) Select page: 2, address: 02, and check that the data is “00 “.
5) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 01, set data: 15, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is „01“.

Processing after Completing Adjustments

1) Turn OFF the main power supply (8.4V).
2) Perform “Flange Adjustment (2)”.

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 2, address: 02, and check that the data is “00”.
4) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
5) Place a ND filter on the lens so that the optimum image is obtain.
6) Select page: 2, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is “01”.

Processing after Completing Adjustments

1) Select page: 0, address: 01, and set data: 00.
2) Turn OFF the main power supply (8.4V).
3) Perform “Flange Back Check”.

4. Flange Back Check

Subject	Siemens star chart (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Checking method:

1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Select page: 2, address: 40, and set data: 02.
4) Select page: 2, address: 41, and set data: 01.
5) Shoot the Siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note1).
8) Select page: 2, address: 21, and set data: 10.
9) Shoot the Siemens star with the zoom WIDE end.
10) Observe the TV monitor and check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjusting remote commander.

1) Select page: 0, address: 03, and set data: 0F.
2) Page 1 shows the state of the focus.

1 : 00 : XX → Odd: Focused
Even: Unfocused

Processing after Completing Adjustments

1) Select page: 2, address: 21, and set data: 00.
2) Select page: 0, address: 03, and set data: 00.
3) Select page: 2, address: 40, and set data: 00.
4) Select page: 2, address: 41, and set data: 00.

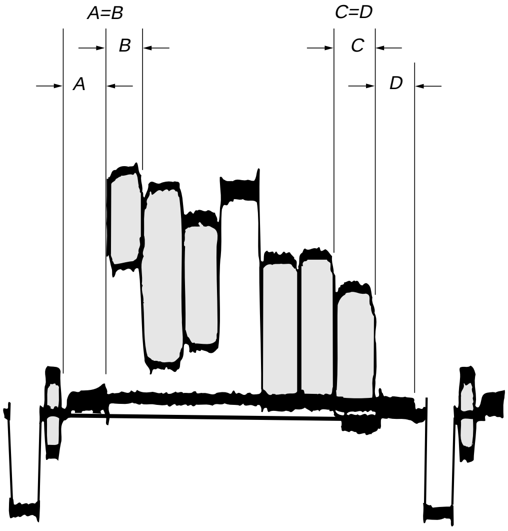
5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, t=0 ± 0.1msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color bar chart standard picture frame".

1. Horizontal period



2. Vertical period

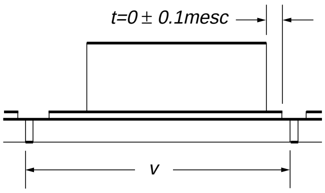


Fig. 5-1-8.

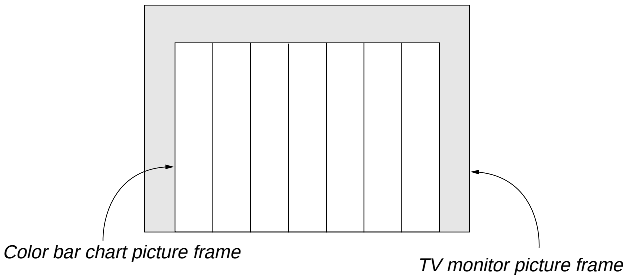


Fig. 5-1-9.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	34, 36, F5, F6
Specified Value	All color luminance points should settle within each color reproduction frame.

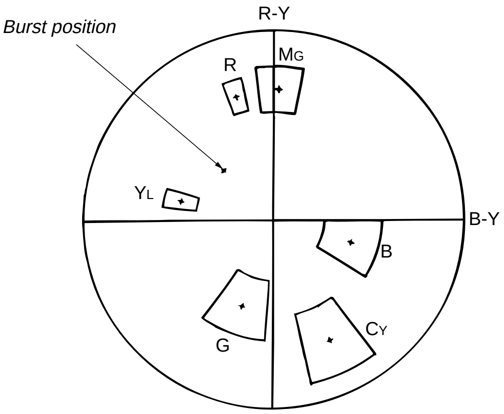


Fig. 5-1-10.

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, set data: 3D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 25, set data: 3F, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of page: F, address: 34, 36, F5 and F6, and settle each color luminance point in each color reproduction frame.

Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.

6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.
If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	3C, 3D

Note 1: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the LIGHT LEVEL data.

00 XX XX
→ Lower two digits
→ Upper two digits

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 06.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 01, set data: 0B, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to decimal notation, and obtain D_1'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table” of “Service mode”.)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation).
   When $D_2 \geqq$ D0
   $D_3' = D_1' - 21$ .... Equation 1
   When $D_2 <$ D0
   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to hexadecimal notation, and obtain D_3.
10) Select page: F, address: 3C, set data: D_3, and press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 01, set data: 09, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to decimal notation, and obtain D_4'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table”.)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation).
   When $D_5 \geqq$ F0
   $D_6' = D_4' - 13$ .... Equation 3
   When $D_5 <$ F0
   $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to hexadecimal notation, and obtain D_6.
16) Select page: F, address: 3D, set data: D_6, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 0, address: 03, and set data: 00.

8. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	31
Specified Value	C0 to FF

Note 1: The right two digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 00 XX
→ Object data

Switch setting:
1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
3) Select of page: 0, address: 03, and set data: 01.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 56, and set data: 40.
6) Select page: 2, address: 01, set data: 19, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 31, set data: 18, and press the PAUSE button of the adjusting remote commander.
8) Check that the DDS display data (Note 1) lies within the specified value.

Processing after Completing Adjustments
1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 2, address: 56, and set data: 00.
6) Select page: 0, address: 03, and set data: 00.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	70 to 73

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is data: 00. If not, turn the power of the unit OFF/ON.

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Wait for 2 seconds.
3) Select page: 2, address: 01, and set data: 11, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 0D, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is take in, the data will be automatically input to page: F, address: 70 to 73.)
5) Select page: 2, address: 02, and check that the data is “01”.
6) Perform “Auto White Balance Adjustment”.

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of LCD or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3A, 3B
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Note 1: Perform “Auto White Balance Standard Data Input” before this adjustment.

Note 2: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 XXXX → Object data

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 3F, and press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 03, and set data: 04.
6) Select page: F, address: 3A, and change the data, and adjust the average value of the DDS display data(Note 2) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 03, and set data: 05.
9) Select page: F, address: 3B, and change the data, and adjust the average value of the DDS display data(Note 2) to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 03, and set data: 00.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-11. A to C

Switch setting:
1) NIGHT SHOT switch .... OFF

Checking method:
1) Check that the lens is not covered with either filter.
2) Select page: 2, address: 01, set data: 0F, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-11.A.
4) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 2, address: 01, set data: 23, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-11.B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0 +0.3) on the lens.
9) Check that the white luminance point stopped moving, and then remove the ND filter 1.3.
10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-11.C.

Processing after Completing Adjustments
1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.

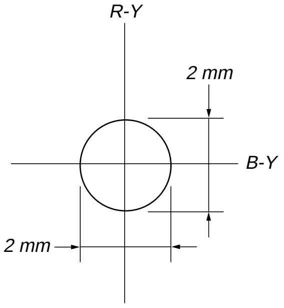


Fig.5-1-11. A

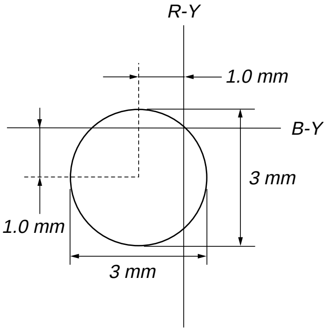


Fig.5-1-11. B

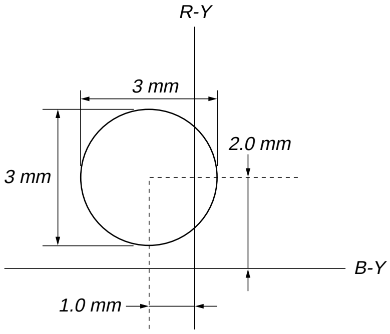


Fig.5-1-11. C

12. Angular Velocity Sensor Sensitivity Check (CCD-TR713E, CCD-TRV46E)

- This adjustment is performed only when replacing the angular velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement
There are two types of repair parts.
Type A : ENC03EA or ENC 03JA
Type B : ENC03EB or ENC 03JB
Replace the broken sensor with a same type sensor. If replace with other parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor
The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Page	Address	Data
F	43	78
F	44	6C

Note: The sensor sensitivity of SE451 and SE452 of the SE-80/81 board is written only on the repair parts.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

(CCD-TR516E)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN910 of the VC-215 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

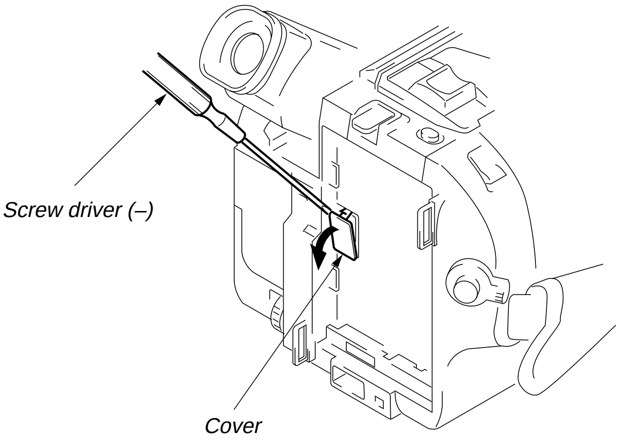


Fig.5-1-12

1. EVF Initial Data Input

Mode	VTR stop
Signal	No signal
Adjustment Page	E
Adjusting Address	C2 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.

2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
C2	B0	VCO adjustment
C3	80	Bright adjustment
C4	77	Contrast adjustment
C5	80	White balance adjustment
C6	80	White balance adjustment
C7	68	Fixed value
C8	50	Fixed value
C9	F8	Fixed value
CA	A8	Fixed value
CB	3C	Fixed value
CC	B0	Backlight Consumption Current Adjustment
CD	70	Fixed value

2. VCO Adjustment (VF-119 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑮ of CN910 (VCO) on VC-215 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	E
Adjustment address	C2
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Check the GND level of the oscilloscope.
5) Select page: E, address: C2, change the data and set the VCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

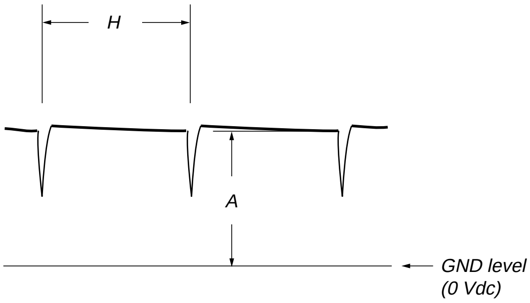


Fig. 5-1-13.

3. Bright Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑯ of CN910 (EVF VG) on VC-215 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	C3
Specified value	A = 7.2 ± 0.1 V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C3, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

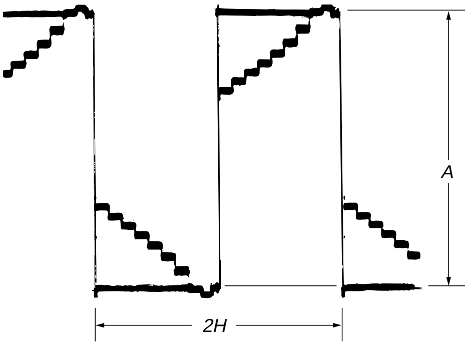


Fig. 5-1-14.

4. Contrast Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑯ of CN910 (EVF VG) on VC-215 board
Measuring Instrument	Oscilloscope
Adjustment Page	E
Adjustment Address	C4
Specified Value	A = 2.0 ± 0.1V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C4, change the data and set the voltage (A) between the 7 step peak and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

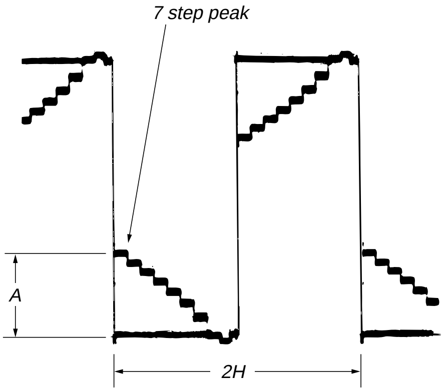


Fig. 5-1-15.

5. Backlight Consumption Current Adjustment (VF-120 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	VTR stop
Signal	No signal
Measurement Point	+ Probe: Pin ⑭ of CN910 (EVF BL 4.75V) on VC-215 board – Probe: Pin ⑬ of CN910 (EVF BL) on VC-215 board
Measuring Instrument	Digital voltmeter
Adjustment Page	E
Adjustment Address	CC
Specified Value	A = 21.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: CC, change the data and set the voltage difference (A) between Pin ⑭ of CN910 (EVF BL 4.75V) and Pin ⑬ of CN910 (EVF BL) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-119 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	E
Adjustment Address	C5, C6
Specified Value	The EVF screen should not be colored.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 03.
4) Select page: E, address: C5 and C6, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	C5	C6
Data	80	80

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: C5 and C6 so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 2, address: 7D, and set data: 00.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

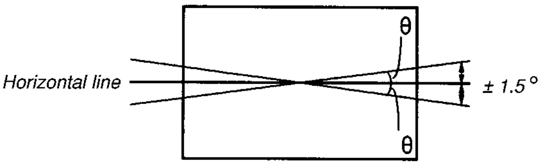
Note: CCD- TR315E/TR415E/TR425E/TR515E/TR713E
CCD- TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/
TRV46E

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 1.5 °

Adjusting method:

1) Adjust RV904 (BRIGHT) (VF-99 board) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.



Specified value : The image should be within ± 1.5 ° of the horizontal line.

Fig. 5-1-16.

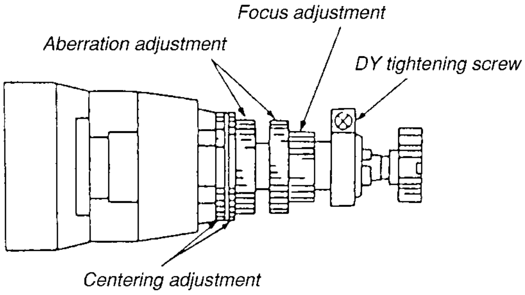


Fig. 5-1-17.

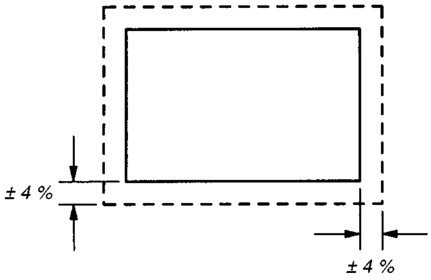
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-17.)

Note : As the centering position changes due to earth magnetism, rotate it 360˚ in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value : ± 4 %

Fig. 5-1-18.

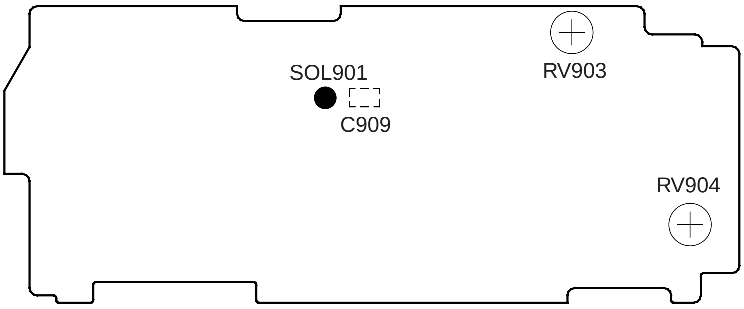
1-5-3. Focus Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-17.)

VF-99 BOARD (SIDE A)



1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	b1≦2 • a1 b2≦0.8 • a2

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

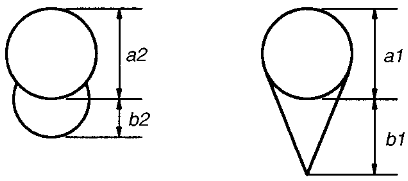


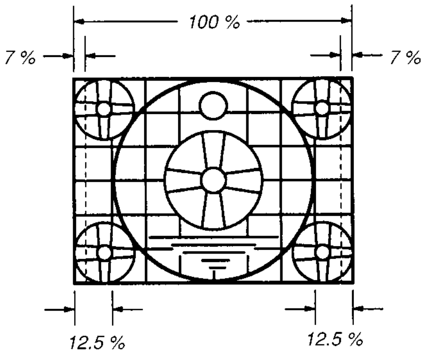
Fig. 5-1-19.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	± 1.5 °

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to “short” or “open”, so that the horizontal direction over scan becomes 14 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

VF-99 BOARD (SIDE A)

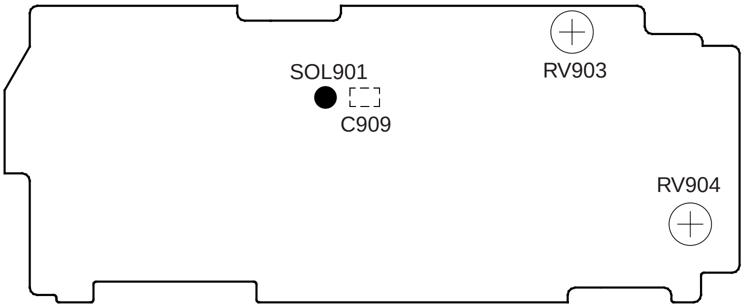


Fig. 5-1-20.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV903
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

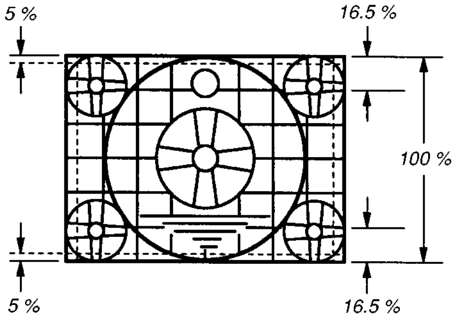


Fig. 5-1-21.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5CSP) Monoscope section
Specified Value	RV904

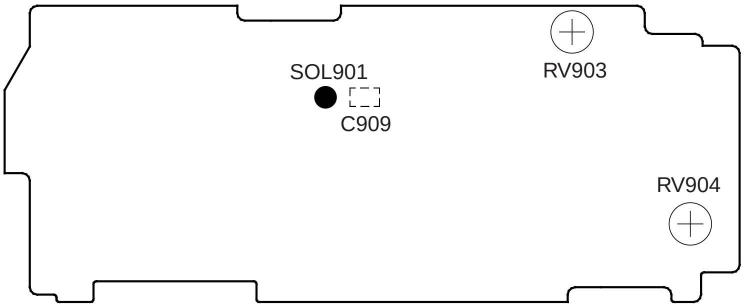
Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-5-5. Horizontal Amplitude Adjustment" and "1-5-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-5-7. Brightness, Contrast Adjustments" again.
Moreover, check the focus, and if it found to be vague, perform "1-5-3. Focus Adjustment" and "1-5-4. Aberration Adjustment".

VF-99 BOARD (SIDE A)



1-6. LCD SYSTEM ADJUSTMENT (TRV SERIES)

Note1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note3: Set the brightness to the center using the LCD BRIGHT button.

Note4: LCD model :

CCD-TRV16E/TRV26E/TRV27E/TRV27EP/
TRV36E/TRV46E

[Adjusting connector]

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.
CN5501 of the PD-107 board
Connect the measuring instruments via the multi CPC jig (J-6082-311-A).
The following table shows the Pin No. and signal name of the connector.

Pin No.	Signal name	Pin No.	Signal name
1	VB	2	VCO VOLTAGE.
3	VG	4	PANEL COM
5	VR	6	N.C.
7	SYNC / HD	8	H START
9	GND	10	GND

1. LCD Initial Data Input

Mode	VTR stop
Signal	Arbitrary
Adjustment Page	E
Adjustment Address	A5 to A7, B0 to B9, BF, C0, C1, CF, D0 to DD

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
A5	53	Fixed value
A6	96	Fixed value
A7	68	Fixed value
B0	3F	Fixed value
B1	C8	Fixed value
B2	1F	Fixed value
B3	1F	Fixed value
B4	00	Fixed value
B5	00	Fixed value
B6	F0	Fixed value
B7	4E	Fixed value
B8	08	Fixed value
B9	00	Fixed value
BF	80	Fixed value
C0	A4	Fixed value
C1	CF	Fixed value
CF	84	Bright adjustment
D0	77	Color adjustment
D1	98	White balance adjustment
D2	7B	White balance adjustment
D3	DC	Contrast adjustment
D4	80	D range adjustment
D5	89	V-COM level adjustment
D6	80	VCO adjustment
D7	80	V-COM level adjustment
D8	80	Fixed value
D9	77	Fixed value
DA	80	Fixed value
DB	52	Fixed value
DC	99	Fixed value
DD	99	Fixed value

2. VCO Adjustment (PD-107 board)

Set the VCO freerun frequency. If deviated, the LCD screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ② of CN5501 (VCO VOLTAGE) of PD-107 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D6
Specified value	A = 1.70 ± 0.02V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D6, change the data and set the VCO VOLTAGE (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: E, address: D6, and read the data (D_{D6}).
7) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input to address: BF. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

When $D_{D6} \geqq 55$

$D_{BF} = D_{D6} - 55$

When $D_{D6} < 55$

$D_{BF} = 00$

Note2 : After setting data, be sure to press the PAUSE button.

8) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 0, address: 01, and set data: 00.

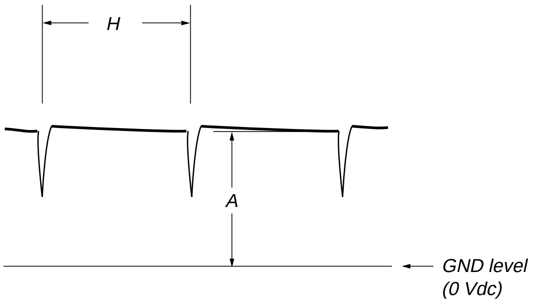


Fig. 5-1-22.

3. D range Adjustment (PD-107 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D4
Specified value	A = 2.98 ± 0.05V

Note1 : Press the DISPLAY button and erase the screen indictors on the LCD screen.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D4, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

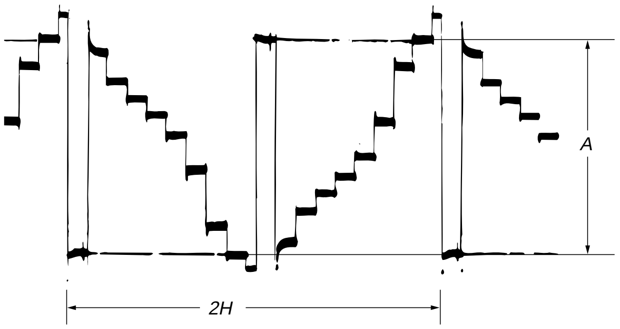


Fig. 5-1-23.

4. Bright Adjustment (PD-107 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	CF
Specified value	A = 1.34 ± 0.05V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 40.
4) Select page: E, address: CF, change the data and set the voltage (A) between the pedestal and white to the specified value. (The data of address: CF should be “41” to “BF”.)
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

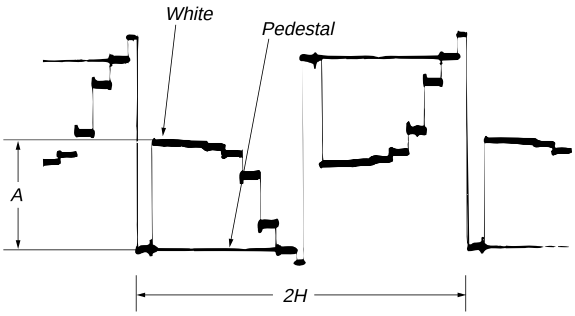


Fig. 5-1-24.

5. Contrast Adjustment (PD-107 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D3
Specified value	A = 2.54 ± 0.07V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D3, change the data and set the voltage (A) between the pedestal (0 IRE) and 100 IRE to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

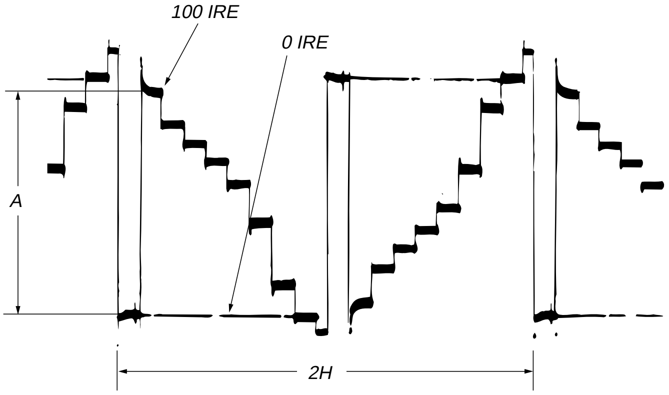


Fig. 5-1-25.

6. V-COM Level Adjustment (PD-107 board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ④ of CN5501 (PANEL COM) of PD-107 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D5
Specified value	A = 5.10 ± 0.05V

Note1 : Perform “Bright Adjustment” and “Contrast Adjustment” before this adjustment.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 00.
4) Select page: E, address: D5, change the data and set the PANEL COM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.

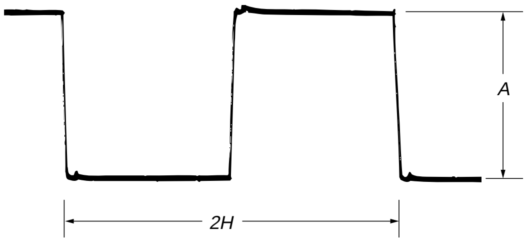


Fig. 5-1-26.

7. Color Adjustment (PD-107 board)

Set the color saturation to the standard value. If deviated, the color will be to dark or light.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501 (VG) of PD-107 board External trigger : Pin ④ of CN5501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D0
Specified value	A = 0.03 ± 0.05V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 57, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 20.
4) Select page: E, address: D0, change the data and set the voltage (A) between the green and white to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: E, address: D9, and set the same data as page: E, address: D0, and press the PAUSE button of the adjusting remote commander.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 2, address: 7D, and set data: 00.
9) Select page: 0, address: 01, and set data: 00.

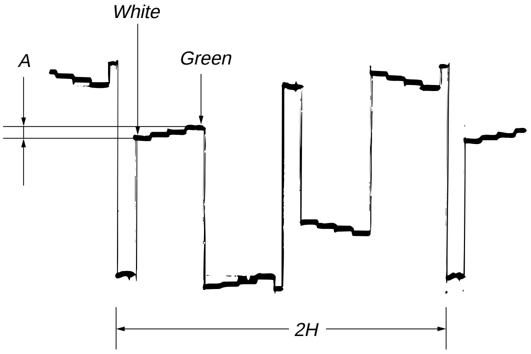


Fig. 5-1-27.

8. V-COM Adjustment (PD-107 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D7
Specified value	The brightness difference between the section Ⓐ and section Ⓑ is minimum.

Note1 : Perform “Bright Adjustment" and “Contrast Adjustment” before this adjustment.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 87.
4) Select page: E, address: D7, change the data so that the brightness of the section A and that of the section B is equal.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

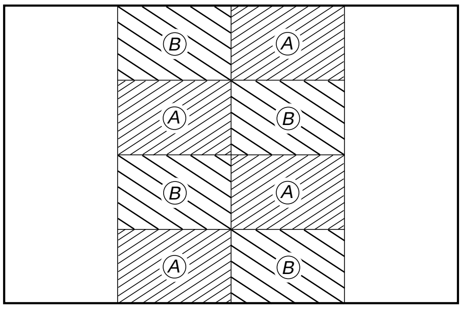


Fig. 5-1-28.

9. White Balance Adjustment (PD-107 board)

Correct the white balance.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D1, D2
Specified value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC5502

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 03.
4) Select page: E, address: D1 and D2, and set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	Data
D1	94
D2	70

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: D1 and D2 so that the LCD screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 7D, and set data: 00.
8) Select page: 0, address: 01, and set data: 00.

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- "8 mm Video Mechanical Adjustment Manual VII B Mechanism ".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "Section 2 DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: F, address: 2A, and set data: 01, and press the PAUSE button of the adjusting remote commander.
7) Select page: D, address: 10, and set data: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.
   By carrying out the above procedure, the unit can be operated without loading a cassette.
   Be sure to carry out "Processing after Operations" after checking the operations.
   Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode	12
Forced camera power supply ON mode	11

[Processing after Operations]

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: D, address: 10, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 2A, and set data: 04 and press the PAUSE button of the adjusting remote commander.
   (Be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1: Pin ⑥ of CN910 of VC-215 board
   External trigger: Pin ⑪ of CN910 of VC-215 board
   (Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking. (WR5-1CP)
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual VII (B Mechanism)".
9) Perform "Processing after operations", after completing adjustments.

CN910 of VC-215 board

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F_0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 2A, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

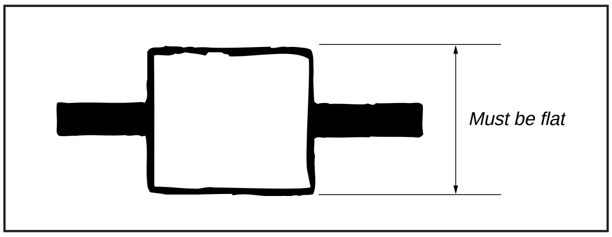


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-60.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For video frequency characteristics adjustment
      (WR5-7NE) Part Code: 8-967-995-18
    - For checking Standard 8 mode operations
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
    - For checking Hi8 mode operations
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
      Note: The following alignment tapes can also be used.
      1) WR5-3CL (8-967-995-36)
      2) WR5-4CSP (8-967-995-46)
    - For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For checking BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76
12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
    Note : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc.
14) Power code Part Code: J-6082-223-A
15) AFM DEV jig (J-6082-312-A)
16) IR Receiving jig (J-6082-383-A)
17) Extension cable (70P, 0.8mm) (J-6082-439-A)

3-1-2. Precautions on Adjusting

1) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to "VTR" or set the "Forced VTR Power ON mode" using the adjusting remote commander (Note 1).
   To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3)
2) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if even if the front panel block (MA-345/346 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-215 board CN916 (18P 0.5mm)
3) The lens block (CD-210/211 board) need not be connected except during battery end adjustment. To remove, disconnect the following connectors.
   1. VC-215 board CN501 (16P, 0.5mm)
   2. VC-215 board CN551 (23P, 0.5mm)
4) The video light model need not be assembled. If removing it. disconnect the following connector.
   1. VC-215 board CN909 (4P, 0.8mm)
5) Cabinet (R) (Camera function switch (CF-60/61board), LCD block, viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-215 board CN911) means removing the lithium 3V power supply (CF-60/61 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" for the data on the history use.) To remove the cabinet (R), disconnect the following connectors.
   1. VC-215 board CN911 (45P, 0.5mm)
   2. DD-117 board CN933 (10P, 1.0mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjusting remote commander.

The above procedure will enable the VTR power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed.
   After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

Note 3: Exiting the "Forced Power ON" mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-215 board CN910. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

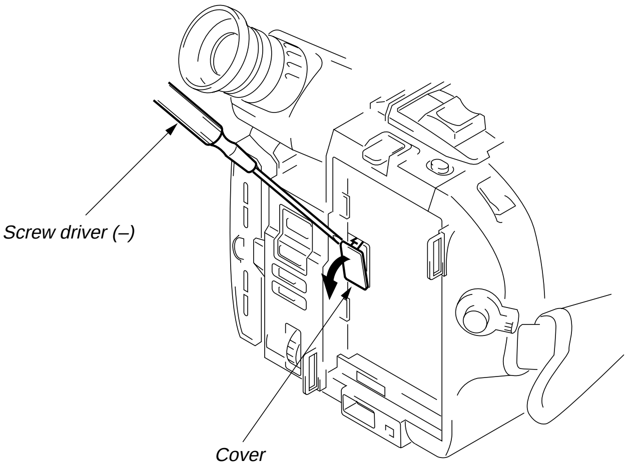


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.

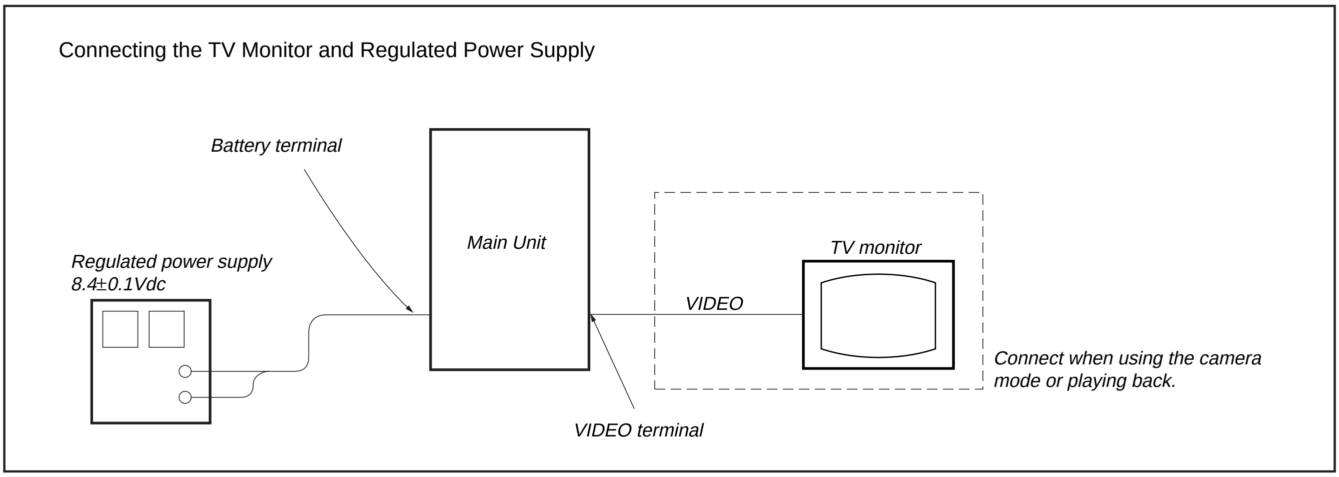

Connecting the TV Monitor and Regulated Power Supply
Battery terminal
Main Unit
TV monitor
Regulated power supply
8.4±0.1Vdc
VIDEO
Connect when using the camera mode or playing back.
VIDEO terminal

Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.
If the type of tape to be used for checking operations is not specified, use whichever type.

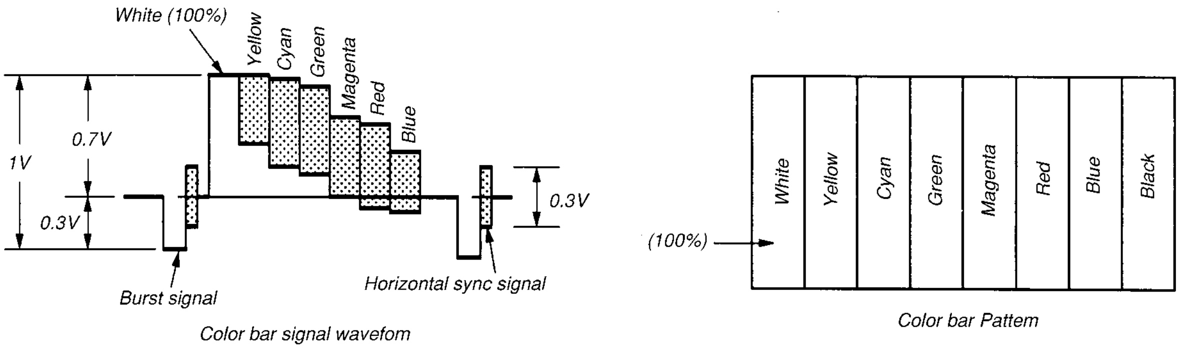
Name	Record-ing mode	Tape type	Tape speed	Usage
Tracking WR5-1CP	Standard8	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	Hi8	ME	LP	Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	Standard8	MP	SP	Checking operations
Operation check (SP mode) WR5-8CSE	Hi8	ME	SP	
Operation check (LP mode) WR5-4CL	Standard8	MP	LP	
Operation check (LP mode) WR5-8CLE	Hi8	ME	LP	
AFM stereo Operation check WR5-9CS	Standard8	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11CS	Standard8	MP	SP	BPF adjustment

Tape type
MP ..... Particle type metal tape
ME ..... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).


White (100%)
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Burst signal
Horizontal sync signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal wavefom

Color bar Pattem

Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Input/Output Level and Impedance

Video output	Phono jack, 1 Vp-p, 75Ω, unbalanced, sync negative
Audio output	Phono jack, Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-8. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Select page: 0, address: 01, and set data: 01 before setting the data of page D and F.

Page F	Address 2A

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.
The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency.
Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.
Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

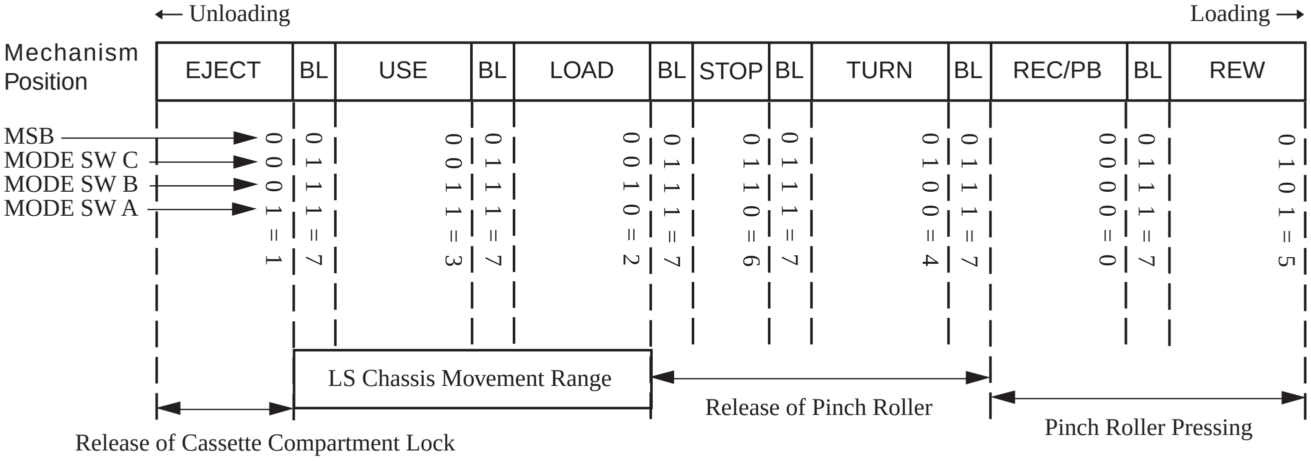
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

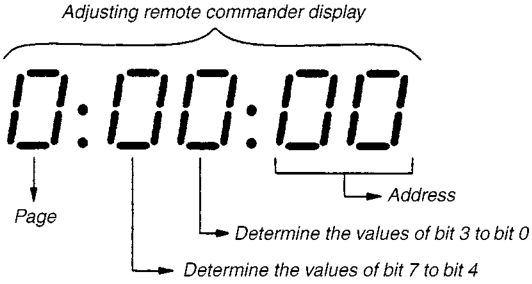
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.


← Unloading
Loading →
Mechanism Position
EJECT
BL
USE
BL
LOAD
BL
STOP
BL
TURN
BL
REC/PB
BL
REW
MSB
MODE SW C
MODE SW B
MODE SW A
0 0 0 1 = 1
0 1 1 1 = 7
0 0 1 1 = 3
0 1 1 1 = 7
0 0 1 0 = 2
0 1 1 1 = 7
0 1 1 0 = 6
0 1 1 1 = 7
0 1 0 0 = 4
0 1 1 1 = 7
0 0 0 0 = 0
0 1 1 1 = 7
0 1 0 1 = 5
LS Chassis Movement Range
Release of Pinch Roller
Pinch Roller Pressing
Release of Cassette Compartment Lock

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.


Adjusting remote commander display
0:00:00
Address
Page
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Switch check (1)

Page 3	Address 43

Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW	OFF	ON
1	CAM MODE SW	OFF	ON
2	START/STOP SW	OFF	ON
3	EJECT SW	OFF	ON
4	CC DOWN SW	OFF	ON
5			
6			
7			

Using method:

1) Select page: 3, address: 43.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch check (2)

Page 3	Address 60 to 66

Using method:
1) Select page: 3, address: 60 to66.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0D	0E to 29	2A to 46	47 to 68	69 to 90	91 to BE	BF to EA	EB to FF
60 (AD0: IC604 (93))	LASER LINK (FK-8500 S008)	STOP (FK-8500 S001)	FF (FK-8500 S003)		EDIT SEARCH (+) (FK-8500 S009)	EDIT SEARCH (–) (FK-8500 S010)		No key input
61 (AD1: IC604 (94))		PAUSE (FK-8500 S002)	REW (FK-8500 S004)	PLAY (FK-8500 S006)				No key input
62 (AD2: IC604 (95))		PICTURE EFFECT (CF-60/61 S006)	MENU (CF-60/61 S010)	EXECUTE (CF-60/61 S015)	TIME (CF-60/61 S021)	5sec REC (CF-60/61 S024)	PUSHING REC (CF-60/61 S024)	NORMAL REC (CF-60/61 S024)
63 (AD3: IC604 (96))	PROGRAM AE SPOT LIGHT (CF-60 S020)	PROGRAM AE PORTRAIT (CF-60 S020)	PROGRAM AE SPORT LESSON (CF-60 S020)	PROGRAM AE BEACH & SKI (CF-60 S020)	PROGRAM AE SUNSET & MOON (CF-60 S020)	PROGRAM AE LANDSCAPE (CF-60 S020)		PROGRAM AE AUTO (CF-60 S020)
64 (AD4: IC604 (97))			EXPOSURE (CF-60/61 S012)	BACK LIGHT (CF-60/61 S017)	FADER (MF-8500 S002)	FOCUS INFINITY (MF-8500 S001)	FOCUS AUTO (MF-8500 S001)	FOCUS MANUAL (MF-8500 S001)
65 (AD5: IC604 (98))	DATE (CF-60/61 S003)	COUNTER RESET (CF-60/61 S008)	END SEARCH (CF-61 S013)	TITLE (CF-60/61 S018)	DISPLAY (CF-61 S022)			No key input
66 (AD6: IC604 (99))	PROGRAM AE (CF-61 S004)	BRIGHT(+) (PD-107 S5801)	BRIGHT(–) (PD-107 S5802)	VOLUME(+) (PD-107 S5803)	VOLUME(–) (PD-107 S5804)	PANEL REVERSE (FP-642)	PANEL CLOSE (FP-642)	PANEL NORMAL (FP-642)

6. Headphone jack check

Page 3	Address 45

Bit	Function	When bit value=1	When bit value=0
1	Headphone jack	Headphone jack is used	

Using method:
1) Select page: 3, address: 45.
2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

7. Input/output selection check

Page 3	Address 49

Bit	Function	When bit value=1	When bit value=0
1			
2			
3			
4	MIC jack		MIC jack is used
5	AUDIO terminal	Monaural	
6	VIDEO terminal	VIDEO terminal is used	

Using method:
1) Select page: 3, address: 49.
2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated.

8. LED, LCD (display window) check

Page 3	Address 05	Bit5

Using method:

1) Select page: 3, address: 05, and set the bit value of Bit5 to “1”.
2) Check that all LED are lit and all segments of LCD (display window) are lit.
3) Select page: 3, address: 05, and set the bit value of Bit5 to “0”.

9. Record of Use Check

Page 3	Address A2 to AA

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method:

1) The record of use data is displayed at page 3, addresses: A2 to AA.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform “1-2. INITIALIZATION OF D, E, F PAGE DATA”, of “5-1. CAMERA SECTION ADJUSTMENT”.

2. Battery End Adjustment (VC-215 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Adjustment Address	30 to 34

Note 1: The lens block and cabinet (R) must be connected.

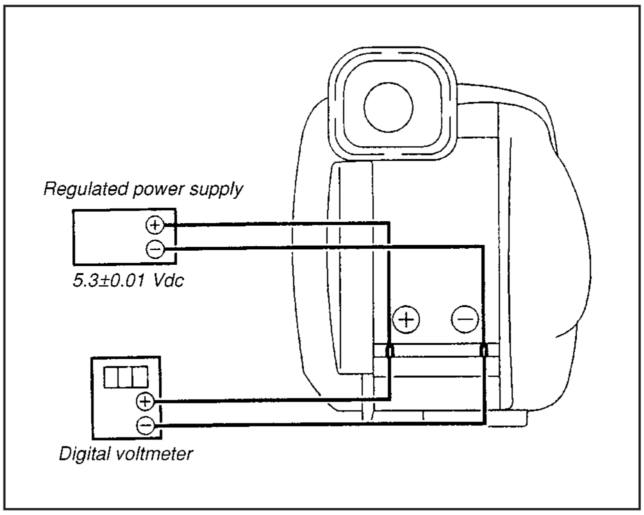


Fig. 5-3-4.

Switch setting
1) AUTO FOCUS .... OFF
2) LCD screen .... Closed
3) NIGHT SHOT .... OFF
4) VIDEOLIGHT .... OFF
(VIDEO LIGHT model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1±0.1Vdc.
2) Turn off the power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the power supply.
5) Load a cassette, and set to the camera recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30±0.01Vdc.
8) Select page: 0, address: FF, data: 00 (section 00)
9) Select page: 3, address: 5D, read the data, and this data is named Dref.
10) Select page: D, address: 30, set data: Dref, and then press the PAUSE button of the adjusting remote commander.
11) Convert Dref to decimal notation, and obtain Dref '. (Refer to Table 5-1-2. “Hexadecimal-decimal conversion table”)
12) Calculate D_{31}', D_{32}', D_{33}' and D_{34}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.

Address: 31 $D_{31}' = \text{Dref}' + 5$
Address: 32 $D_{32}' = \text{Dref}' + 20$
Address: 33 $D_{33}' = \text{Dref}' + 35$
Address: 34 $D_{34}' = \text{Dref}' + 40$

Note 3: After setting each data, be sure to press the PAUSE button.

13) Select page: 3, address: FO, “read the data”, and set the same read the data as page: D, address: 5F, and the press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-215 board)

Improve the capstan servo characteristic. If it is not correct. jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN910 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	69
Specified value	Duty = 50±0.5%

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, and set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
3) Select page: 2, address: 02, and check that the data is "01".
4) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 2, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjustment remote commander.
6) Select page: 0, address: 01, and set data: 00.

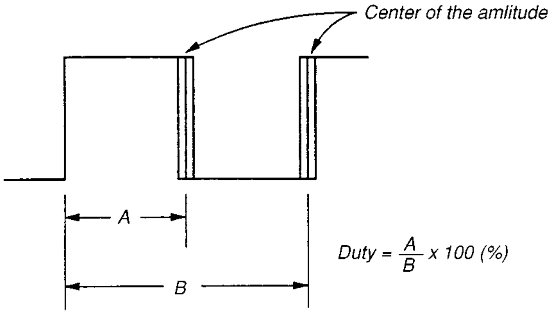


Fig. 5-3-5.

2. RF Switching Position Adjustment (VC-215 Board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment WR5-1CP
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7C (upper digits), 7D (lower digits)
Specified Value	t1 = 0±10μsec

Adjusting Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 20, and press the PAUSE button of the adjustment remote commander.
3) Select page: F, address: 7C, change the data and minimize "t1", and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
4) Select page: F, address: 7D, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjustment remote commander.
6) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjustment remote commander.
7) Select page: 0, address: 01, and set data: 00.

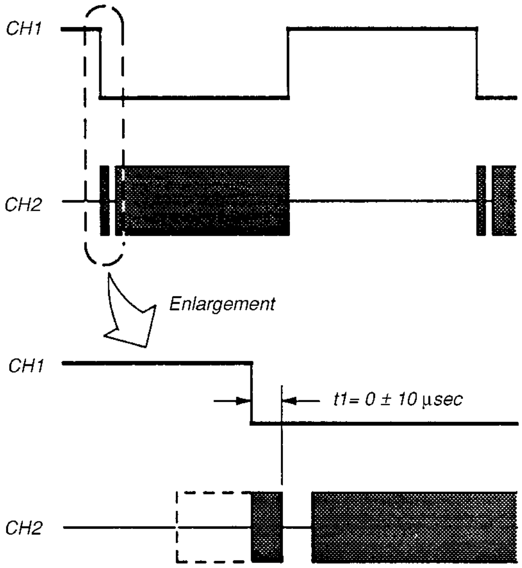


Fig. 5-3-6.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC f0 adjustment
3. Filter f0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. RP filter f0 adjustment
7. Hi8 REC Y current adjustment
8. Standard REC Y current adjustment
9. Hi8 REC L level adjustment
10. Standard8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-215 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin (66) of IC202 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	2C
Specified Value	Pin (66) of IC202 : f=4433593.75±17Hz Pin ⑫ of IC501 : f=14187500±55Hz

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 61, and set data: 30.
3) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 2C, change the data and set the clock frequency(f) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. AFC f0 Adjustment (VC-215 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN910 (AFC f0)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	4A
Specified Value	A = 2.10±0.05Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4A, change the data and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

3. Filter f0 Adjustment (VC-215 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN910 (IR VIDEO)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4D
Specified Value	Minimum residual chroma signal components (A = Bellow 35mV)

Switch setting:

LASER LINK .... ON (Red LED is lit)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4F, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4D, change the data and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

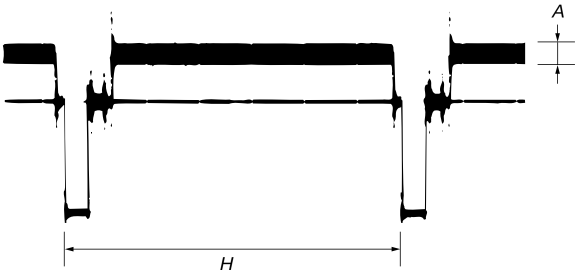


Fig. 5-3-7.

4. Y OUT Level Adjustment (VC-215 board)

Set the Y signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	49
Specified Value	A = 300±5mV

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 49, change the data and set the SYNC level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

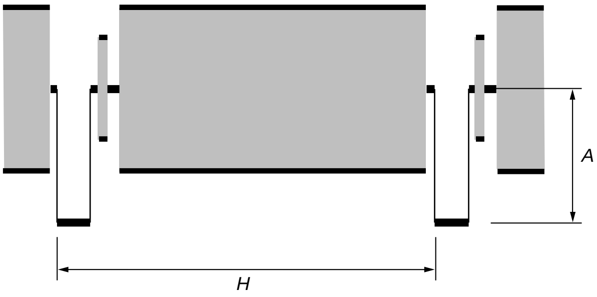


Fig. 5-3-8.

5. C OUT Level Adjustment (VC-215 board)

Set the chroma signal output level.

Mode	VTR stop
Signal	No signal
Measurement Point	VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4B
Specified Value	A = 300±5mV

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 4B, change the data and set the burst level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

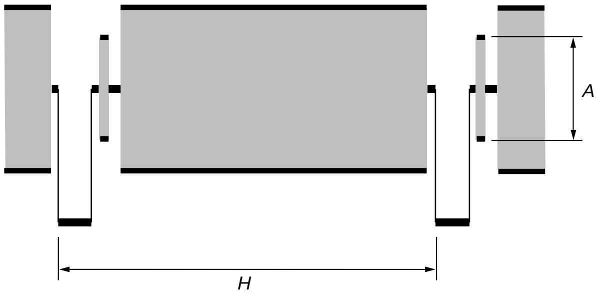


Fig. 5-3-9.

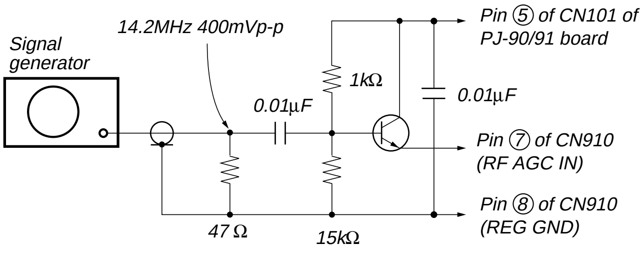
6. RP Filter f_0 Adjustment (VC-215 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑨ of CN910 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4E
Specified Value	A = Below 10mVp-p

Connection:

1) Input a 14.2MHz, 400mVp-p CW signal to Pin ⑦ of CN910 (RF AGC IN).



Transistor : General NPN transistor (2SC403. etc)

47 Ω resistor :	*1-249-401-11*
1k Ω resistor :	*1-249-417-11*
15k Ω resistor :	*1-249-431-11*
0.01µF capacitor :	*1-101-004-00*

Fig. 5-3-10.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 35, and press the PAUSE button of the adjusting remote commander.
3) Only for Standard8 model, select page: D, address: 15, after memorizing the data , set the bit value of bit0 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
4) Select page: F, address: 4E, change the data and minimize the 14.2 MHz signal level (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: D, address: 15, and set the data memorized at step 3), and press the PAUSE button of the adjusting remote commander..
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

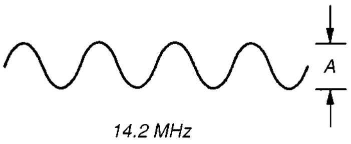


Fig. 5-3-11.

7. Hi8 REC Y Current Adjustment (VC-215 board)
(CCD-TR515E/TR516E/TR713E CCD-TRV36E/TRV46E)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 185±5mV

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 54, and read the data (D_{54}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

Address: 53	$D_{53} = D_{54}$
Address: 55	$D_{55} = D_{54}$
Address: 56	$D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	A1
58	95
59	A1
5A	95

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
16) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
17) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
18) Select page: 0, address: 01, and set data: 00.
19) Select page: 0, address: 01, and set data: 01.
20) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: D, address: 15, and set the data memorized.
23) Press the PAUSE button of the adjusting remote commander.
24) Select page: 0, address: 01, and set data: 00.

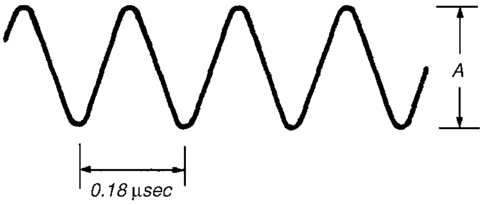


Fig. 5-3-12.

8. Standard8 REC Y Current Adjustment (VC-215 board)
(CCD-TR315E/TR415E/TR425E CCD-TRV16E/TRV26E/TRV27E/TRV27EP)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 185±5mV

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 54, and read the data (D_{54}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
    Address: 53 $D_{53} = D_{54}$
    Address: 55 $D_{55} = D_{54}$
    Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	80
58	80
59	80
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
16) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
17) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
18) Select page: 0, address: 01, and set data: 00.
19) Select page: 0, address: 01, and set data: 01.
20) Select page: D, address: 14, and set the data memorized.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: D, address: 15, and set the data memorized.
23) Press the PAUSE button of the adjusting remote commander.
24) Select page: 0, address: 01, and set data: 00.

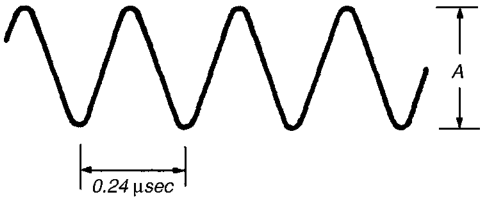


Fig. 5-3-13.

9. Hi8 REC L Level Adjustment (VC-215 board)
(CCD-TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 10.1±0.6mV

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Adjusting method:
1) Insert Hi8 ME tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service mode").
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
6) Insert Hi8 ME tape, set to recording mode.
7) Select page: 0, address: 01, and set data: 01.
8) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
9) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 5C, read the data (D_{5C}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

Address: 5B	$D_{5B} = D_{5C}$
Address: 5D	$D_{5D} = D_{5C}$
Address: 5E	$D_{5E} = D_{5C}$
Address: 5F	$D_{5F} = D_{5C} + 12$
Address: 60	$D_{60} = D_{5C} + 12$
Address: 61	$D_{61} = D_{5C} + 12$
Address: 62	$D_{62} = D_{5C} + 12$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 63 to 64.

Address	Data
63	7A
64	7A

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: 0, address: 01, and set data: 00.
16) Perform "REC C Current Adjustment".
17) Select page: 0, address: 01, and set data: 01.
18) Select page: D, address: 14, and set the data memorized.
19) Press the PAUSE button of the adjusting remote commander.
20) Select page: D, address: 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: 0, address: 01, and set data: 00.

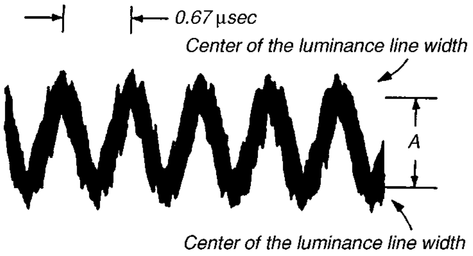

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 5-3-14.

10. Standard8 REC L Level Adjustment (VC-215 board)
(CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 9.3±0.5mV

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Adjusting method:
1) Insert Srandrd8 MP tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8. Service mode").
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to "0".
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
   4.7kΩ registor : 1-249-425-11
6) Insert Srandrd8 MP tape, set to recording mode.
7) Select page: 0, address: 01, and set data: 01.
8) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
9) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
10) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
11) Press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 5C, read the data (D_{5C}).
13) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

Address: 5B	$D_{5B} = D_{5C}$
Address: 5D	$D_{5D} = D_{5C}$
Address: 5E	$D_{5E} = D_{5C}$
Address: 5F	$D_{5F} = D_{5C}$
Address: 60	$D_{60} = D_{5C}$
Address: 61	$D_{61} = D_{5C}$
Address: 62	$D_{62} = D_{5C}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

14) Write the following data in page: F, address: 63 to 64.

Address	Data
63	80
64	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

15) Select page: 0, address: 01, and set data: 00.
16) Perform "REC C Current Adjustment".
17) Select page: 0, address: 01, and set data: 01.
18) Select page: D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
19) Press the PAUSE button of the adjusting remote commander.
20) Select page: D, address: 15, and set the data memorized.
21) Press the PAUSE button of the adjusting remote commander.
22) Select page: 0, address: 01, and set data: 00.

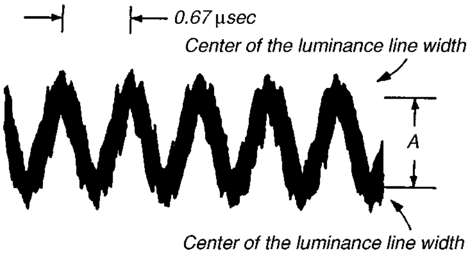

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 5-3-15.

11. REC C Current Adjustment (VC-215 board)

Set the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	Hi8 model : A = 34.6±1.2mV Standard8 model : A = 30.0±1.1mV

Note 1: Hi8 model: CCD- TR515E/TR516E/TR713E
CCD-TRV36E/TRV46E
Standard8 model: CCD-TR315E/TR415E/TR425E
CCD-TRV16E/TRV26E/TRV27E/
TRV27EP

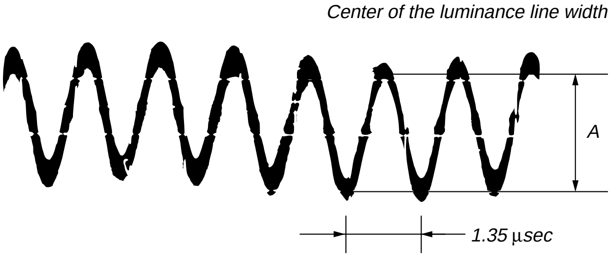


Fig. 5-3-16.

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

2) Connect Pin ① of IC001 and GND with a 0.01F capacitor.
0.01µF capacitor: 1-101-004-00

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-117 board and GND with 4.7kΩ registor for a second.)
4.7kΩ registor : 1-249-425-11
5) Insert a tape, set to recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
8) Select page: 2, address: 61, and set data: 30.
9) Select page: F, address: 65, change the data and set the REC chroma signal level (A) to the specified value.
10) Press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 61, and set data: 10.
12) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
13) Select page: 0, address: 01, and set data: 00.
14) Select page: 0, address: 01, and set data: 01.
15) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
16) Press the PAUSE button of the adjusting remote commander.
17) Select page: D, address: 15, and set the data memorized.
18) Press the PAUSE button of the adjusting remote commander.
19) Select page: 0, address: 01, and set data: 00.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TR713E/TRV46E)

Adjust using a IR receiver jig (J-6082-383-A).

Switch setting:
LASER LINK .... (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-215 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑯ of IC751 of VC-215 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	68
Specified Value	f = 11.85±0.05MHz

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

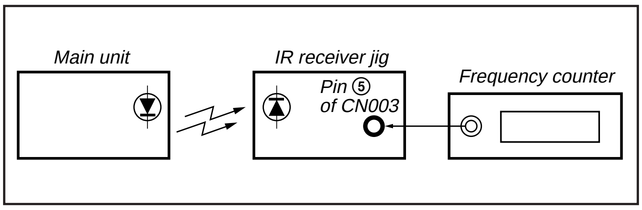


Fig. 5-3-17.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 37, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 68, change the data, and set the video carrier frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. IR Video Deviation Adjustment (VC-215 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	A = 0.87±0.04V

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

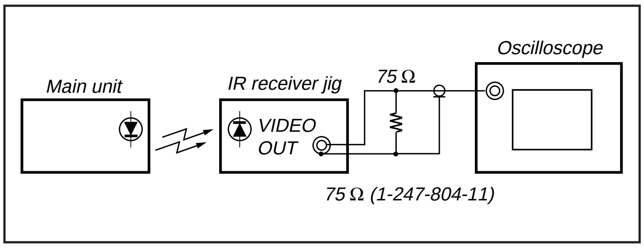


Fig. 5-3-18.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 39, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 66, and change the data, set the video signal amplitude (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

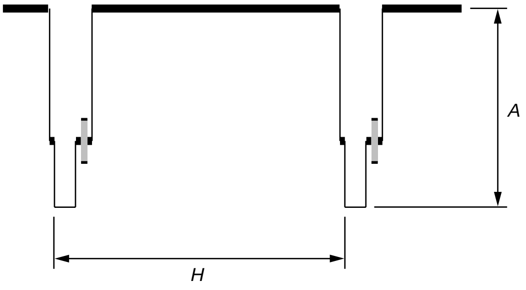


Fig. 5-3-19.

3. IR Audio Deviation Adjustment (VC-215 board)

Mode	VTR recording
Signal	Audio signal : 400Hz, –7.5dBs : AUDIO terminal Video signal : Color bar signal : VIDEO terminal
Measurement Point	AUDIO terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	67
Specified Value	Signal level: –7.5±2.0dBs

Connection of Equipment
Connect the measuring device as shown in the following figure, and adjust.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Connect the audio level meter to the AUDIO terminal of the IR receiver jig.
3) Select page: F, address: 67, change the data and set the 400Hz audio signal level to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.

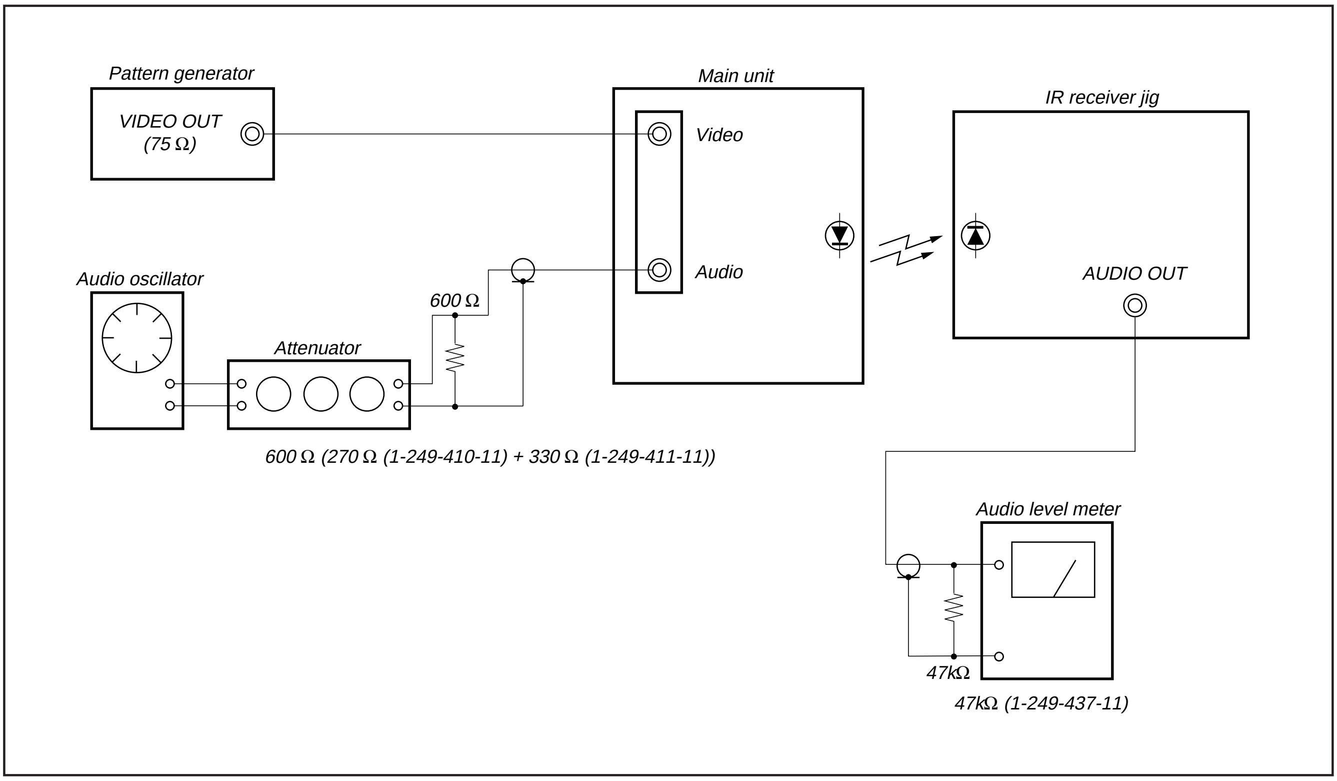

Pattern generator
VIDEO OUT
(75 Ω)
Main unit
Video
Audio
IR receiver jig
AUDIO OUT
Audio oscillator
600 Ω
Attenuator
600 Ω (270 Ω (1-249-410-11) + 330 Ω (1-249-411-11))
Audio level meter
47kΩ
47kΩ (1-249-437-11)

Fig. 5-3-20.

3-6. AUDIO SYSTEM ADJUSTMENT

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig. 5-3-25.

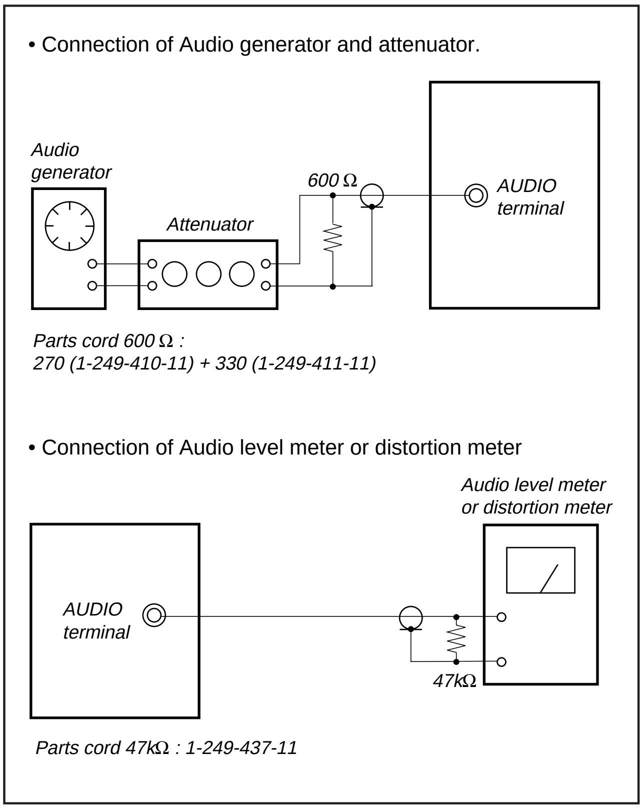

• Connection of Audio generator and attenuator.
Audio generator
Attenuator
600 Ω
AUDIO terminal
Parts cord 600 Ω :
270 (1-249-410-11) + 330 (1-249-411-11)
• Connection of Audio level meter or distortion meter
Audio level meter or distortion meter
AUDIO terminal
47kΩ
Parts cord 47kΩ : 1-249-437-11

Fig. 5-3-21.

1. 1.5 MHz Deviation Adjustment (VC-215 board)

Adjust to the optimum audio FM signal distortion.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	46
Specified Value	–7.5±0.5dBs

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 46, change the data and set the 400Hz signal level to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

2. BPF Adjustment (VC-215 board)

Adjust to the optimum audio BPF characteristics of the IC.
If the adjustment is not correct, the distortion rate and S/N ratio will worsen.

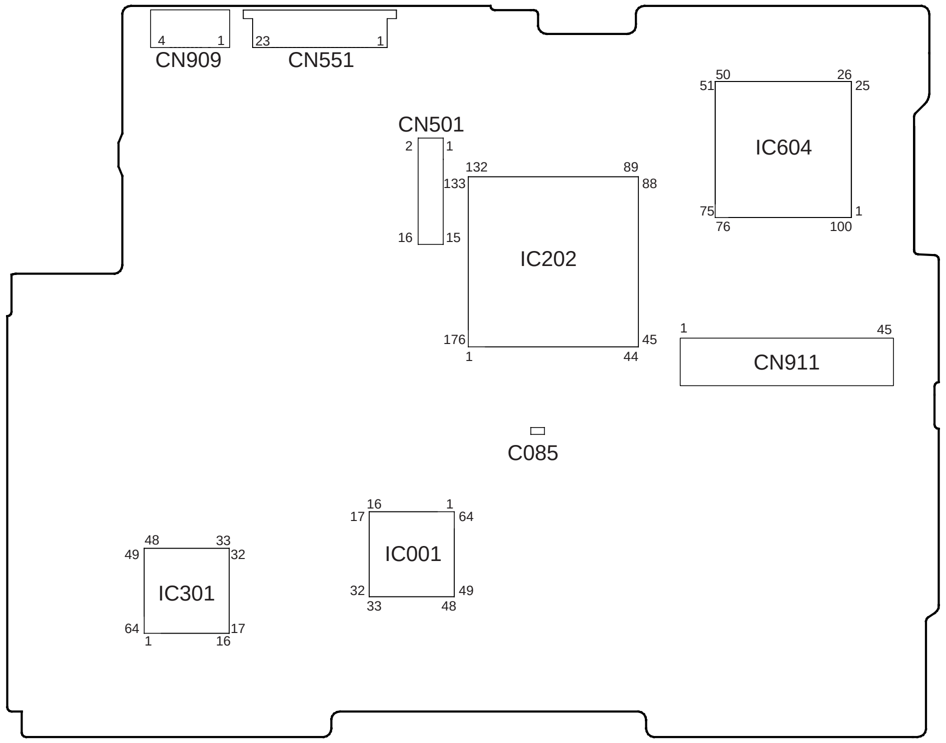
Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11CS)
Measurement Point	Audio output terminal
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The distortion rate should be and minimum.

Adjusting method :

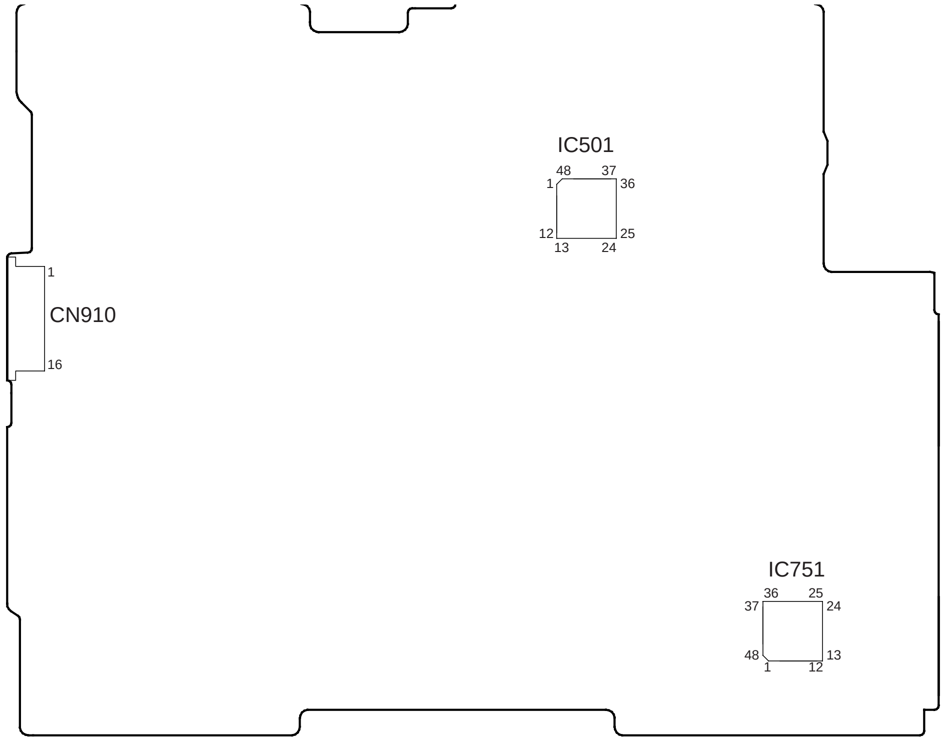
1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 47, change the data and minimize the distortion rate.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-215 BOARD (SIDE A)


CN909
4
1
CN551
23
1
CN501
2
1
16
15
IC202
132
89
133
88
176
45
1
44
IC604
50
26
51
25
75
1
76
100
CN911
1
45
C085
IC001
16
1
17
64
32
49
33
48
IC301
48
33
49
32
64
17
1
16

VC-215 BOARD (SIDE B)


IC501
48
37
1
36
12
25
13
24
CN910
1
16
IC751
36
25
37
24
48
13
1
12

SECTION 6
REPAIR PARTS LIST

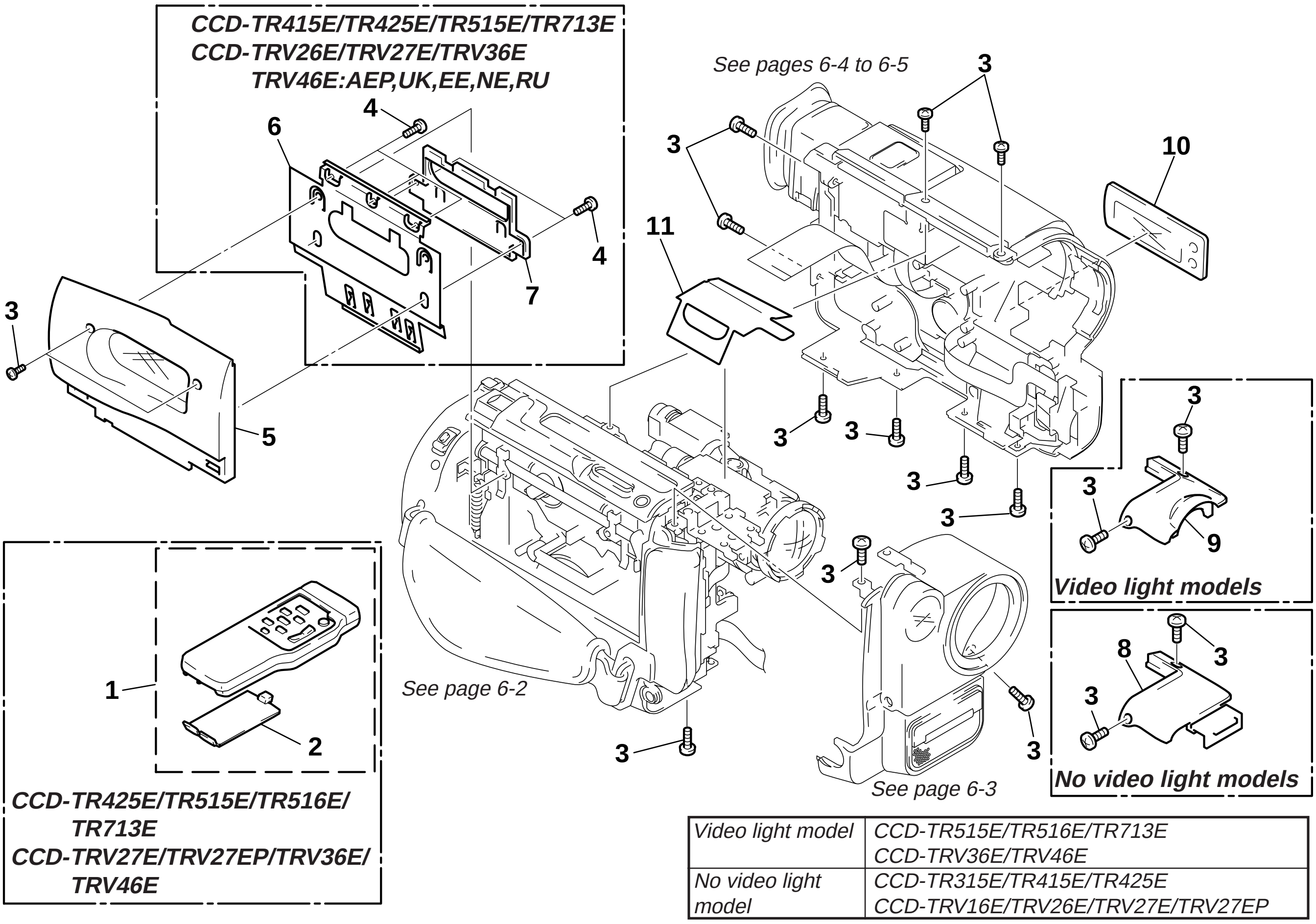
6-1. EXPLODED VIEWS

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
  East European model is abbreviated as EE.
  North European model is abbreviated as NE.
  Russian model is abbreviated as RU.
  Hong Kong model is abbreviated as HK.
  Australian model is abbreviated as AUS.
  Chinese model is abbreviated as CN.
  Tourist model is abbreviated as JE.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

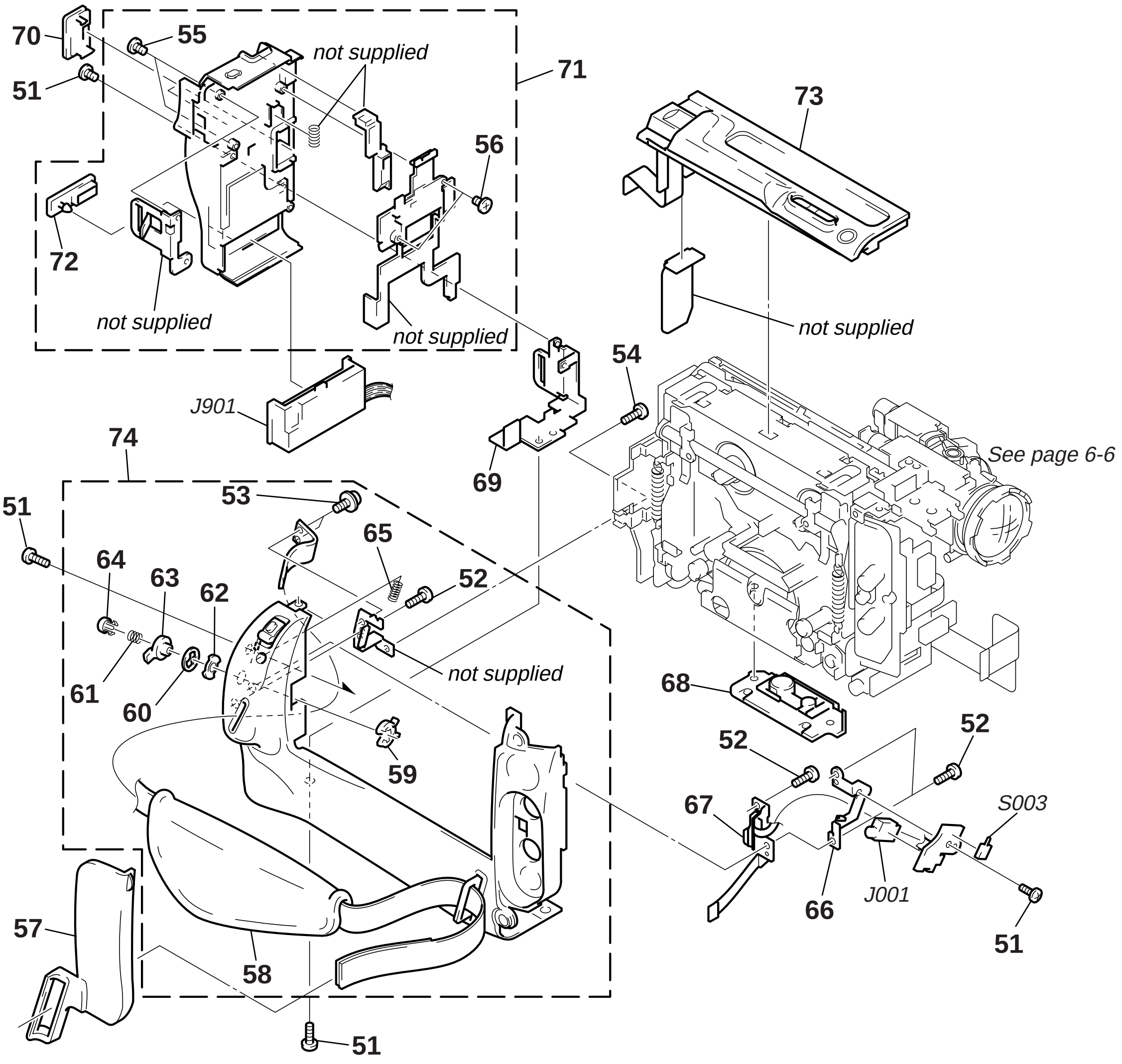
6-1-1. REMOTE COMMANDER AND CASSETTE LID ASSEMBLY



Video light model	CCD-TR515E/TR516E/TR713E CCD-TRV36E/TRV46E
No video light model	CCD-TR315E/TR415E/TR425E CCD-TRV16E/TRV26E/TRV27E/TRV27EP

Ref. No.	Part No.	Description	Remark
1	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E)	
2	3-958-131-01	LID, BATTERY CASE (for RMT-708) (TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E)	
3	3-962-826-01	SCREW (2 x 4)	
4	3-713-791-01	SCREW (M1.7 x 4), TAPPING, P2 (TR515E/TR713E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
4	3-713-791-51	SCREW (M1.7 x 3.5), TAPPING, P2 (TR415E/TR425E/TRV26E/TRV27E)	
5	X-3948-222-1	LID ASSY, CASSETTE (TR516E/TRV46E:E,HK,AUS,CN,JE)	
5	X-3948-223-1	LID ASSY, CASSETTE (TR315E/TRV16E/TRV27EP)	
5	X-3949-177-1	LID (IM) ASSY, CASSETTE (TR515E/TR713E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
5	X-3949-529-1	LID (IM) ASSY, CASSETTE (TR415E/TR425E/TRV26E/TRV27E)	
6	3-987-678-11	PLATE, CASSETTE SHIELD (TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
7	3-987-677-01	COVER (C), FERRITE (TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
8	3-987-645-01	CABINET (N) (No video light models)	
9	3-987-652-01	CABINET (LT) (TR516E)	
9	3-987-652-02	CABINET (LT) (TR515E/TR713E/TRV36E/TRV46E)	
10	3-053-274-11	WINDOW (900), LCD (TR713E)	
10	3-053-274-31	WINDOW (900), LCD (TR515E)	
10	3-053-274-51	WINDOW (900), LCD (TR516E)	
10	3-053-275-11	WINDOW (910), LCD (TRV46E)	
10	3-053-275-31	WINDOW (910), LCD (TRV36E)	
10	3-053-275-91	WINDOW (910), LCD (TRV26E)	
10	3-054-607-11	WINDOW (900), LCD (TR415E)	
10	3-054-607-21	WINDOW (900), LCD (TR315E)	
10	3-054-607-31	WINDOW (900), LCD (TR425E)	
10	3-054-642-01	WINDOW (910), LCD (TRV16E)	
10	3-054-642-11	WINDOW (910), LCD (TRV27E/TRV27EP)	
11	3-053-276-01	SHEET (M), LENS INSULATING	

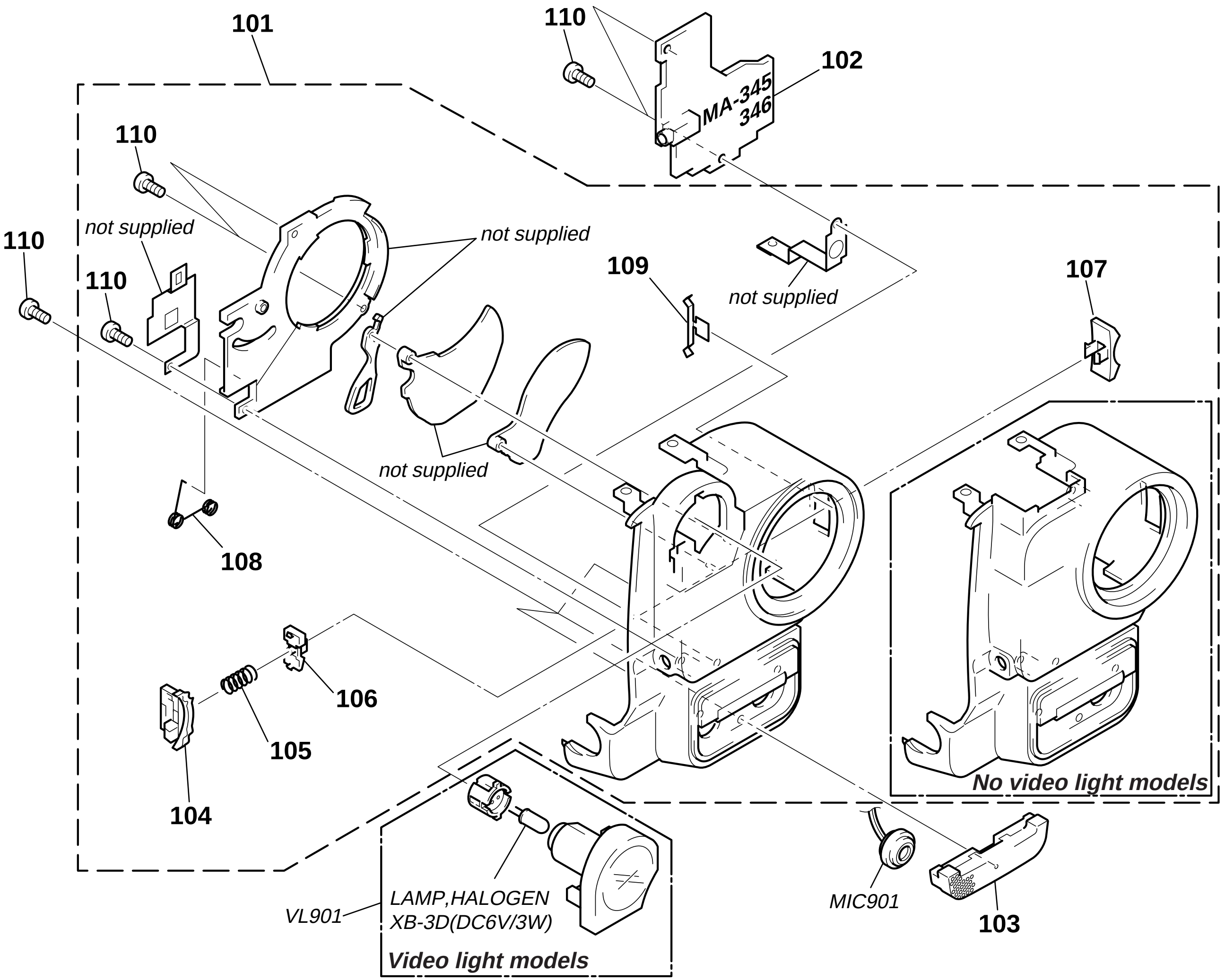
6-1-2. CABINET (L) AND BATTERY PANEL ASSEMBLY


70
55
not supplied
71
51
73
56
72
not supplied
not supplied
not supplied
54
J901
See page 6-6
74
69
51
53
65
64
63
62
52
not supplied
68
61
60
52
52
59
67
S003
J001
66
51
57
58
51

Ref. No.	Part No.	Description	Remark
51	3-962-826-01	SCREW (2 x 4)	
52	3-948-339-61	TAPPING	
53	3-679-362-11	SCREW	
54	3-713-786-21	SCREW (M2 x 3)	
55	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
56	3-713-791-51	SCREW (M1.7 x 3.5), TAPPING, P2	
57	3-975-522-11	COVER, JACK	
58	3-052-815-01	BELT (ES), GRIP	
59	3-949-192-01	HOLDER, STAND-BY KNOB	
60	3-970-854-01	SPRING, STAND-BY	
61	3-979-642-01	SPRING, COMPRESSION	
62	3-975-966-01	SHEET METAL (2), SS	
63	3-969-081-01	KNOB, STAND-BY	
64	3-960-566-01	BUTTON, S/S	
65	3-302-492-00	SPRING, COMPRESSION	
* 66	3-975-532-01	HOLDER, EL	
67	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
68	3-987-717-01	SCREW, TRIPOD	
69	3-987-679-01	SHEET METAL (LOWER), STRAP	
70	3-975-752-01	LID (BT), CPC	
71	X-3948-171-1	PANEL ASSY, BATTERY	
72	3-987-656-01	LID, JACK	
73	1-418-215-21	SWITCH BLOCK, CONTROL (FK-8500) (TR415E/TR425E/TR515E/TRV26E/TRV27E/TRV27EP/TRV36E)	
73	1-418-215-61	SWITCH BLOCK, CONTROL (FK-8500) (TR713E/TRV46E:AEP,UK,EE,NE,RU)	
73	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500) (TR315E/TR516E/TRV16E)	
73	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500) (TRV46E:E,HK,AUS,CN,JE)	
74	X-3948-207-1	CABINET (L) ASSY (TRV series)	
74	X-3948-208-1	CABINET (L) ASSY (TR series)	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
S003	1-572-688-11	SWITCH, PUSH (EJECT)	

6-1-3. FRONT PANEL BLOCK ASSEMBLY

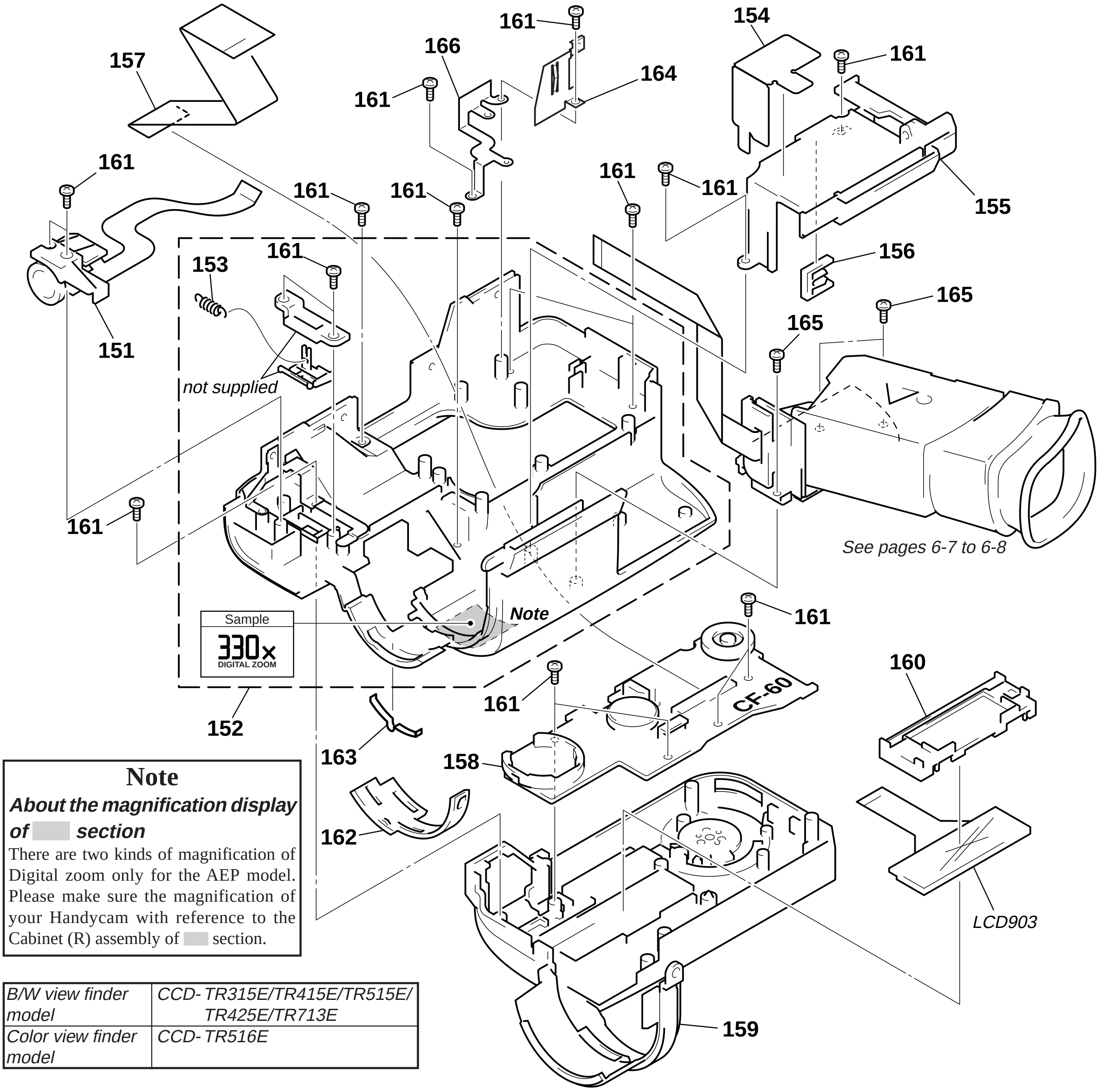
Video light model	*CCD-TR515E/TR516E/TR713E* *CCD-TRV36E/TRV46E*
No video light model	*CCD-TR315E/TR415E/TR425E* *CCD-TRV16E/TRV26E/TRV27E/TRV27EP*


101
110
102
MA-345
346
110
110
not supplied
not supplied
110
109
not supplied
107
not supplied
108
106
105
104
No video light models
VL901
LAMP,HALOGEN
XB-3D(DC6V/3W)
Video light models
MIC901
103

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	X-3949-168-1	PANEL ASSY, FRONT (TR515E/TR516E)	
101	X-3949-169-1	PANEL ASSY, FRONT (TR713E)	
101	X-3949-453-1	PANEL ASSY (V), FRONT (TRV46E)	
101	X-3949-454-1	PANEL ASSY (V), FRONT (TRV36E)	
101	X-3949-503-1	PANEL ASSY, FRONT (TR315E/TR415E)	
101	X-3949-513-1	PANEL ASSY, FRONT (TR425E)	
101	X-3949-514-1	PANEL ASSY (V), FRONT (TRV16E/TRV26E)	
101	X-3949-515-1	PANEL ASSY (V), FRONT (TRV27E/TRV27EP)	
102	A-7073-782-A	MA-345 (B) BOARD, COMPLETE	(TR515E/TR516E)
102	A-7073-794-A	MA-345 (IB) BOARD, COMPLETE (TR713E)	
102	A-7073-812-A	MA-346 (VIB) BOARD, COMPLETE (TRV46E)	
102	A-7073-820-A	MA-345 (SL) BOARD, COMPLETE	(TR315E/TR415E)
102	A-7073-823-A	MA-346 (VZB) BOARD, COMPLETE (TRV36E)	
102	A-7073-873-A	MA-346 (VZL) BOARD, COMPLETE	(TRV16E/TRV26E)
102	A-7073-888-A	MA-345 (Z0) BOARD, COMPLETE (TR425E)	
102	A-7073-889-A	MA-346 (V) BOARD, COMPLETE	(TRV27E/TRV27EP)
* 103	X-3948-493-1	GRILLE ASSY (G), MICROPHONE	
104	3-987-632-01	HOLDER, P KNOB	
105	3-973-619-01	SPRING, COMPRESSION	
106	3-987-633-01	BUTTON, LOCK	
107	3-987-631-01	KNOB, P	
108	3-987-882-01	SPRING, TORSION	
109	3-987-642-01	SPRING, CLICK	
110	3-948-339-61	TAPPING	
MIC901	1-542-312-11	MICROPHONE	
⚠VL901	1-517-760-11	LIGHT, VIDEO (for Video light models)	

6-1-4. CABINET (R) BLOCK ASSEMBLY (TR series)



Note

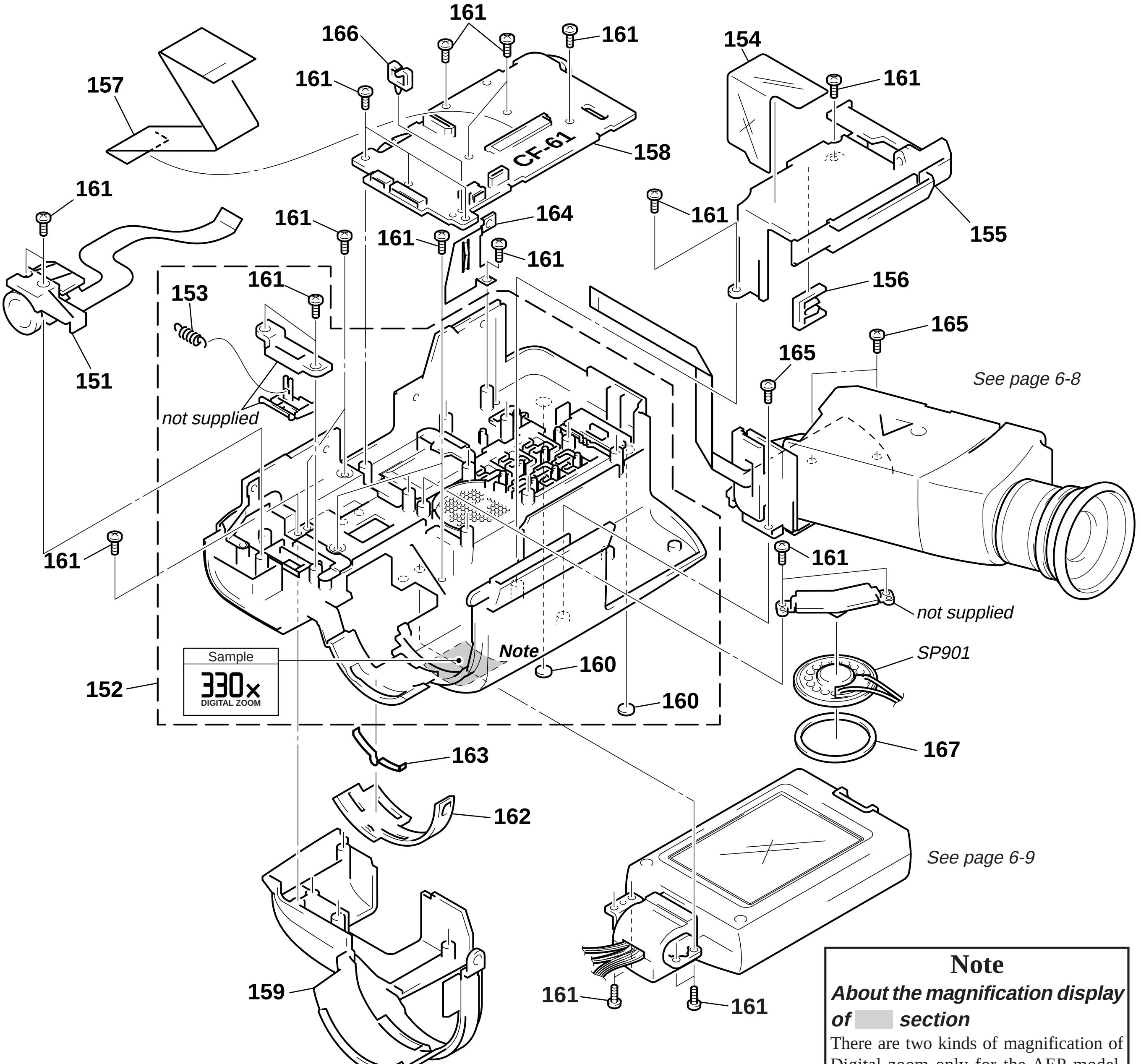
About the magnification display of ▨ section

There are two kinds of magnification of Digital zoom only for the AEP model. Please make sure the magnification of your Handycam with reference to the Cabinet (R) assembly of ▨ section.

B/W view finder model	*CCD-TR315E/TR415E/TR515E/TR425E/TR713E*
Color view finder model	*CCD-TR516E*

	Ref. No.	Part No.	Description	Remark
	151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
	152	X-3949-170-1	CABINET (R) ASSY (Digital zoom : 72x)	(TR515E:AEP,UK/TR713E:AEP,UK)
	152	X-3949-179-1	CABINET (R) ASSY (Digital zoom : 330x)	(TR515E:AEP,EE,NE,RU/TR516E/TR713E:AEP,EE,NE,RU)
	152	X-3949-501-1	CABINET (R) ASSY (TR315E)	
	152	X-3949-516-1	CABINET (R) ASSY (Digital zoom : 36x)	(TR415E:AEP,UK)
	152	X-3949-517-1	CABINET (R) ASSY (Digital zoom : 72x)	(TR425E:AEP,UK)
	152	X-3949-518-1	CABINET (R) ASSY (Digital zoom : 220x)	(TR415E:AEP,EE,NE,RU)
	152	X-3949-519-1	CABINET (R) ASSY (Digital zoom : 330x)	(TR425E:AEP,EE,NE,RU)
	153	3-989-121-01	SPRING, TENSION	
*	154	3-987-842-01	SHEET, VF FLEXIBLE RETAINER	(for B/W View finder models)
	155	X-3948-603-1	BASE ASSY, VF	
	156	3-987-783-01	LOCK, TILT	
	157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
	158	A-7073-783-A	CF-60 (CN) BOARD, COMPLETE (TR516E)	
	158	A-7073-795-A	CF-60 (P) BOARD, COMPLETE	(TR415E/TR425E/TR515E/TR713E)
	158	A-7073-821-A	CF-60 (N) BOARD, COMPLETE (TR315E)	
	159	X-3949-172-1	COVER ASSY, TR (TR515E/TR516E/TR713E)	
	159	X-3949-500-1	COVER ASSY, TR (TR315E/TR415E/TR425E)	
	160	3-053-195-01	HOLDER, LCD	
	161	3-948-339-61	TAPPING	
	162	3-987-744-01	KNOB, IR	
	163	3-987-739-01	SPRING, LINK PLATE	
	164	9-987-742-01	PLATE (878), GROUND	
	165	3-948-339-01	SCREW, TAPPING	
*	166	3-053-202-01	SHEET METAL, ELECTROSTATIC	
	LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	

6-1-5. CABINET (R) BLOCK ASSEMBLY (TRV series)


161
166
161
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154
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157
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158
CF-61
161
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164
161
155
161
161
156
153
161
165
165
151
See page 6-8
not supplied
161
161
not supplied
Sample
330x
DIGITAL ZOOM
Note
160
SP901
152
160
167
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162
See page 6-9
159
161
161

Note

About the magnification display of ▨ section

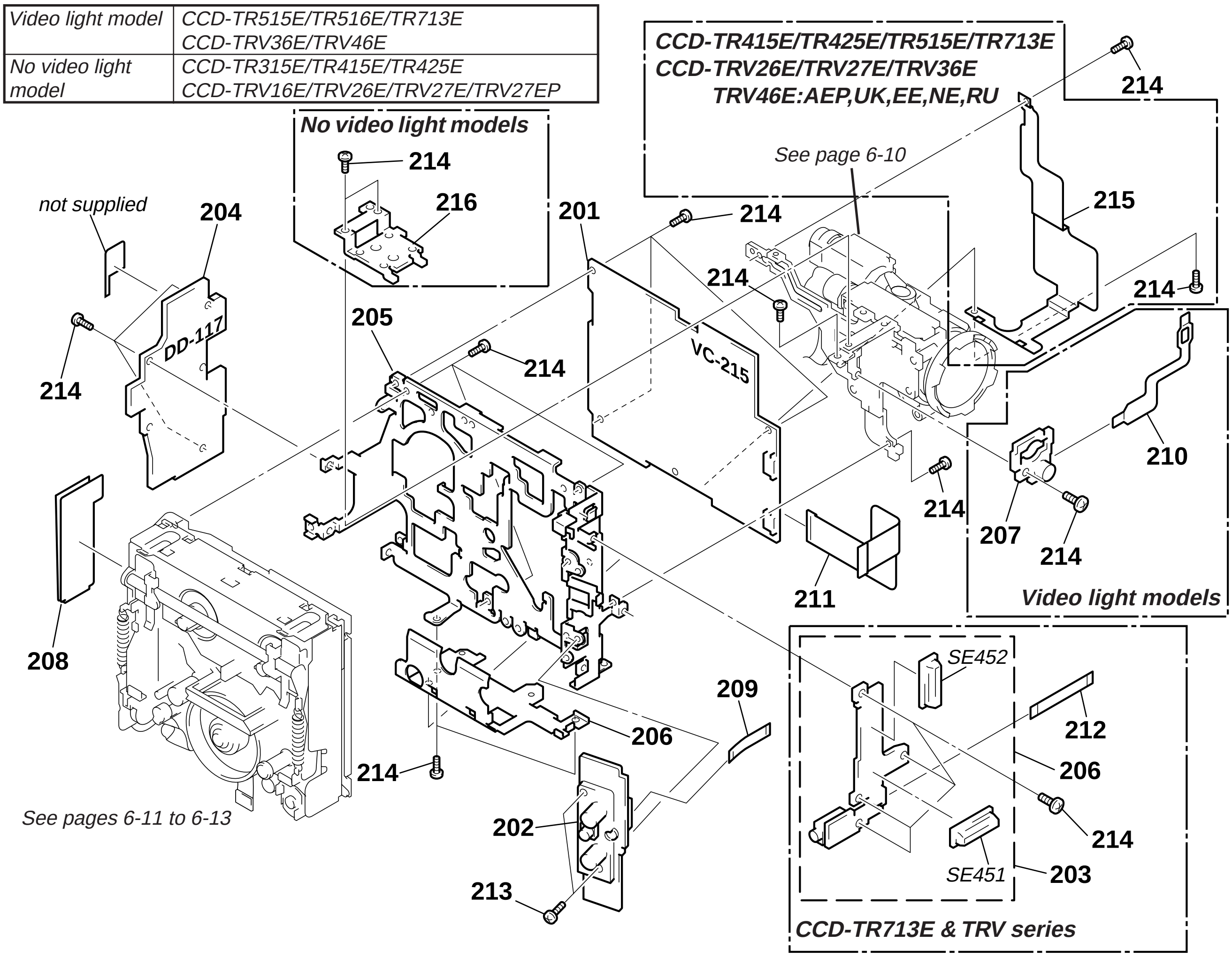
There are two kinds of magnification of Digital zoom only for the AEP model. Please make sure the magnification of your Handycam with reference to the Cabinet (R) assembly of ▨ section.

Ref. No.	Part No.	Description	Remark
151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
152	X-3949-171-1	CABINET (R) ASSY (Digital zoom : 72x)	(TRV36E:AEP,UK/TRV46E:AEP,UK)
152	X-3949-280-1	CABINET (R) ASSY (Digital zoom : 330x)	(TRV36E:AEP,EE,NE,RU/TRV46E:AEP,E,EE,NE,RU,HK,AUS,CN,JE)
152	X-3949-520-1	CABINET (R) ASSY (Digital zoom : 36x)	(TRV26E:AEP,UK)
152	X-3949-521-1	CABINET (R) ASSY (Digital zoom : 72x)	(TRV27E:AEP,UK)
152	X-3949-522-1	CABINET (R) ASSY (TRV16E)	
152	X-3949-523-1	CABINET (R) ASSY (Digital zoom : 220x)	(TRV26E:AEP,EE,NE,RU)
152	X-3949-524-1	CABINET (R) ASSY (Digital zoom : 330x)	(TRV27E:AEP,EE,NE,RU/TRV27EP)
153	3-989-121-01	SPRING, TENSION	
* 154	3-987-842-01	SHEET, VF FLEXIBLE RETAINER	
155	X-3948-603-1	BASE ASSY, VF	

Ref. No.	Part No.	Description	Remark
156	3-987-783-01	LOCK, TILT	
157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
158	A-7073-811-A	CF-61 BOARD, COMPLETE	
159	X-3949-173-1	COVER ASSY, IR (TRV46E)	
159	X-3949-349-1	COVER ASSY, IR (TRV36E)	
159	X-3949-530-1	COVER ASSY, IR	(TRV16E/TRV26E/TRV27E/TRV27EP)
160	3-959-978-02	CUSHION, PANEL	
161	3-948-339-61	TAPPING	
162	3-987-744-01	KNOB, IR	
163	3-987-739-01	SPRING, LINK PLATE	
164	9-987-742-01	PLATE (878), GROUND	
165	3-948-339-01	SCREW, TAPPING	
* 166	3-053-798-01	CLAMP, HARNESS	
167	3-965-367-01	SPACER, SP	
SP901	1-504-753-41	SPEAKER (2.8 CM)	

6-1-6. MAIN BOARDS BLOCK ASSEMBLY

Video light model	*CCD-TR515E/TR516E/TR713E CCD-TRV36E/TRV46E*
No video light model	*CCD-TR315E/TR415E/TR425E CCD-TRV16E/TRV26E/TRV27E/TRV27EP*



No video light models
214
216
not supplied
204
201
214
CCD-TR415E/TR425E/TR515E/TR713E
CCD-TRV26E/TRV27E/TRV36E
TRV46E:AEP,UK,EE,NE,RU
See page 6-10
214
215
214
214
DD-117
214
205
214
VC-215
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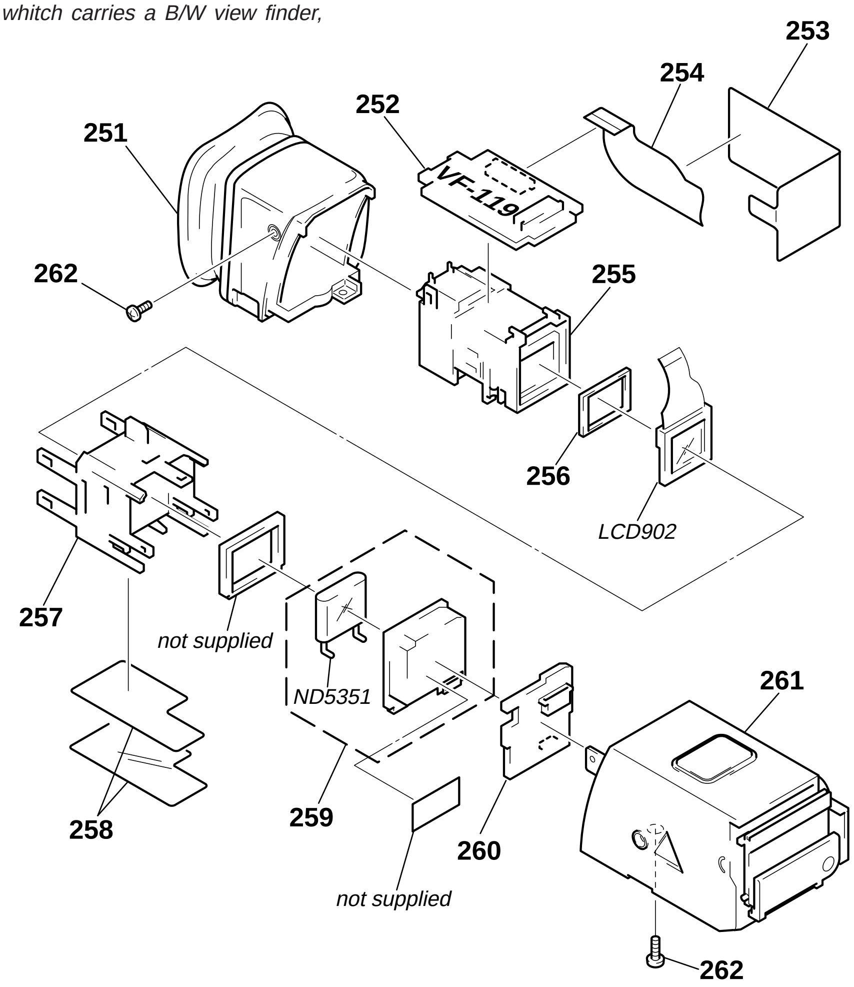
211
Video light models
208
209
SE452
212
206
206
214
214
SE451
203
202
213
See pages 6-11 to 6-13
CCD-TR713E & TRV series

Ref. No.	Part No.	Description	Remark
201	A-7094-113-A	VC-215 (ZSL0PE) BOARD, COMPLETE (TR315E/TR415E/TR425E)	
201	A-7094-114-A	VC-215 (ZB0) BOARD, COMPLETE (TR515E)	
201	A-7094-115-A	VC-215 (ZCB0) BOARD, COMPLETE (TR516E)	
201	A-7094-116-A	VC-215 (MMIB0) BOARD, COMPLETE (TR713E)	
201	A-7094-119-A	VC-215 (VMMIB0P) BOARD, COMPLETE (TRV46E)	
201	A-7094-120-A	VC-215 (VZLB0) BOARD, COMPLETE (TRV36E)	
201	A-7094-203-A	VC-215 (VZL0P) BOARD, COMPLETE (TRV16E/TRV26E/TRV27E/TRV27EP)	
202	A-7073-788-A	PJ-90 BOARD, COMPLETE (TR315E/TR516E)	
202	A-7073-793-A	PJ-90 (CE) BOARD, COMPLETE (TR415E/TR425E/TR515E/TR713E)	
202	A-7073-802-A	PJ-91 (VCE) BOARD, COMPLETE (TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
202	A-7073-809-A	PJ-91 (V) BOARD, COMPLETE (TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN,JE)	
203	A-7073-789-A	SE-80 (MM) BOARD, COMPLETE (TR713E)	
203	A-7073-803-A	SE-81 (VMMCE) BOARD, COMPLETE (TRV46E:AEP,UK,EE,NE,RU)	
203	A-7073-810-A	SE-81 (VMM) BOARD, COMPLETE (TRV46E:E,HK,AUS,CN,JE)	
203	A-7073-825-A	SE-81 (V) BOARD, COMPLETE (TRV16E/TRV27EP)	
203	A-7073-849-A	SE-81 (VCE) BOARD, COMPLETE (TRV26E/TRV27E/TRV36E)	
204	A-7073-785-A	DD-117 (MMCB0) BOARD, COMPLETE (TR516E)	
204	A-7073-791-A	DD-117 (MMIB0) BOARD, COMPLETE (TR713E)	
204	A-7073-806-A	DD-117 (VMMIB0) BOARD, COMPLETE (TRV46E)	
204	A-7073-818-A	DD-117 (ZL0) BOARD, COMPLETE (TR315E/TR415E/TR425E)	
204	A-7073-824-A	DD-117 (VZB0) BOARD, COMPLETE (TRV36E)	
204	A-7073-830-A	DD-117 (ZB0) BOARD, COMPLETE (TR515E)	
204	A-7073-874-A	DD-117 (VZL0) BOARD, COMPLETE (TRV16E/TRV26E/TRV27E/TRV27EP)	
205	3-987-711-11	FRAME (A), MD	
206	3-987-675-01	FRAME (B), MD (TR315E/TR516E/TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN,JE)	
206	3-987-675-11	FRAME (B), MD (TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
207	A-7073-787-A	VL-21 BOARD, COMPLETE (TR515E/TR516E/TR713E)	
207	A-7073-808-A	VL-22 BOARD, COMPLETE (TRV36E/TRV46E)	
* 208	3-987-716-01	PROTECTOR, LS FLEXIBLE	
209	1-668-957-11	FP-621 FLEXIBLE BOARD	
210	1-672-454-11	FP-58 FLEXIBLE BOARD (for Video light models)	
211	1-672-453-11	FP-56 FLEXIBLE BOARD	
212	1-668-956-11	FP-620 FLEXIBLE BOARD (TR713E & TRV series)	
213	3-962-826-01	SCREW (2 x 4)	
214	3-713-786-21	SCREW (M2 x 3)	
215	X-3949-183-1	SHIELD ASSY, RP(TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)	
216	3-987-719-01	BRACKET, SHOE (for No video light models)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW) (TR713E/TRV46E)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH) (TR713E/TRV46E)	

6-1-7. COLOR EVF BLOCK ASSEMBLY (Color View Finder model CCD-TR516E)

Note : As for the model whitch carries a B/W view finder, refer to page 6-8.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VF-119
251
262
255
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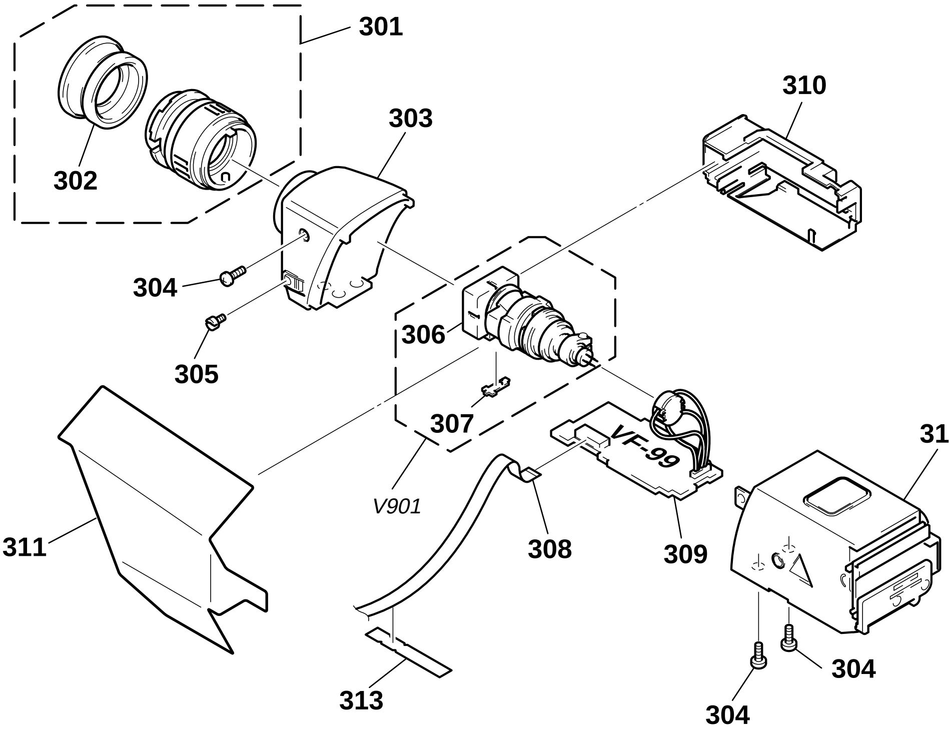
LCD902
257
not supplied
ND5351
261
258
259
260
not supplied
262

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
251	X-3948-237-1	CABINET (REAR) (SC) (N) ASSY, EVF	
252	A-7073-437-A	VF-119 BOARD, COMPLETE	
253	3-053-224-01	SHEET ,FLEXIBLE RETAINER	
254	1-672-455-11	FP-57 FLEXIBLE BOARD	
255	X-3948-229-1	LENS ASSY (860), VF	
* 256	3-960-302-11	CUSHION (1), LCD	
257	X-3949-174-1	HOLDER ASSY, BL	
258	3-050-905-01	SHEET, VF LIGHT INTERCEPTION	
259	A-7073-439-A	LB-54 BOARD, COMPLETE	
260	A-7073-438-A	VF-120 BOARD, COMPLETE	
261	X-3949-175-1	CABINET (FRONT) ASSY, EVF	
262	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
LCD902	8-753-023-37	LCX024AK-4/5 COMPLE	
⚠ND5351	1-517-325-21	LAMP, FLUORESCENT (0.55 INCH)	

6-1-8. B/W EVF BLOCK ASSEMBLY
(B/W View Finder models CCD-TR315E/TR415E/TR425E/TR515E/TR713E & TRV series)

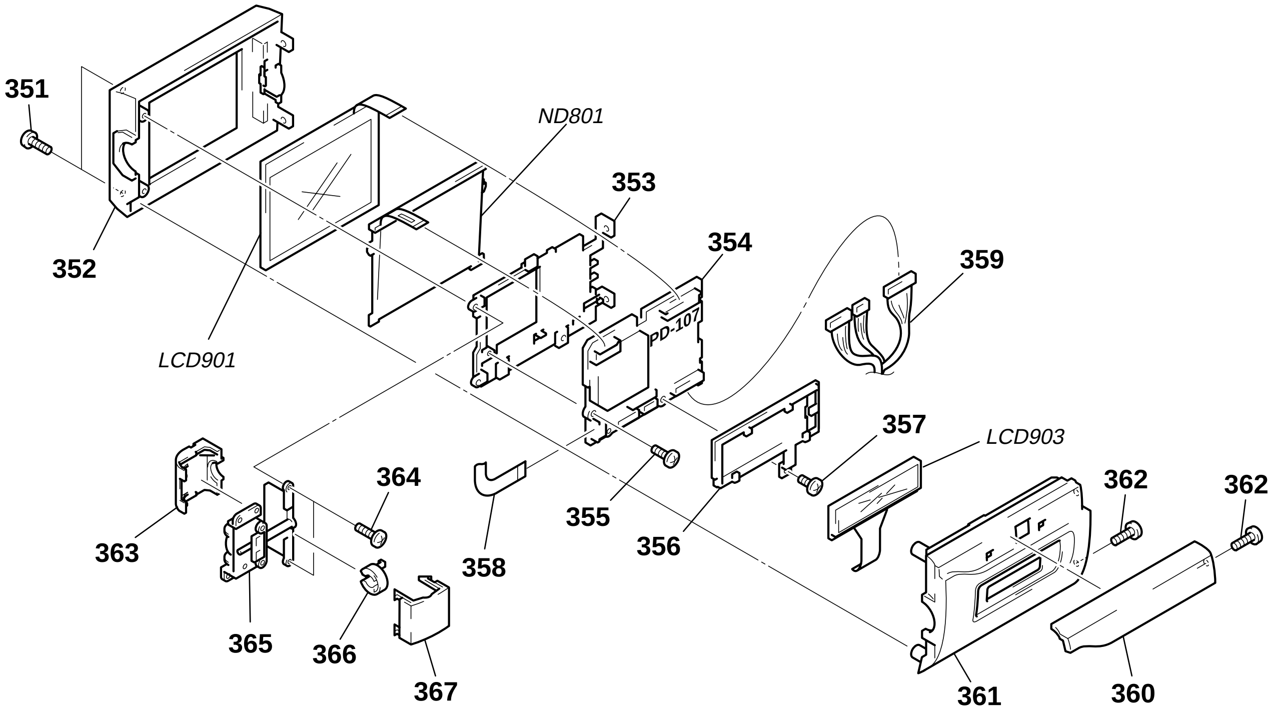
Note : As for the model whitch carries a color view finder, refer to page 6-7.



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
301	X-3949-273-1	FINDER ASSY	
302	3-963-391-01	EYE CUP	
303	X-3948-278-1	CABINET (REAR) (878) B ASSY	
304	3-968-729-61	SCREW (M2 x 3), LOCK ACE, P2	
305	3-975-898-01	SCREW (T), F LOCK	
306	3-977-292-01	MASK, CRT	
307	3-725-130-01	COVER, HINGE VOLTAGE	
308	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)	
309	A-7066-774-A	VF-99 (HP) BOARD, COMPLETE	
310	X-3948-279-1	HOLDER (878) ASSY, CRT	
* 311	3-989-914-01	SHEET, VF (B/W) ELECTROSTATIC	
312	X-3948-364-1	CABINET (FRONT) (845) B ASSY (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)	
312	X-3949-176-1	CABINET (FRONT) ASSY, EVF (TR515E/TR713E/TRV36E/TRV46E)	
* 313	3-987-843-01	SHEET, VF FLEXIBLE LOCK	
⚠V901	1-452-673-61	CRT ASSY (M01KXX90WB)	

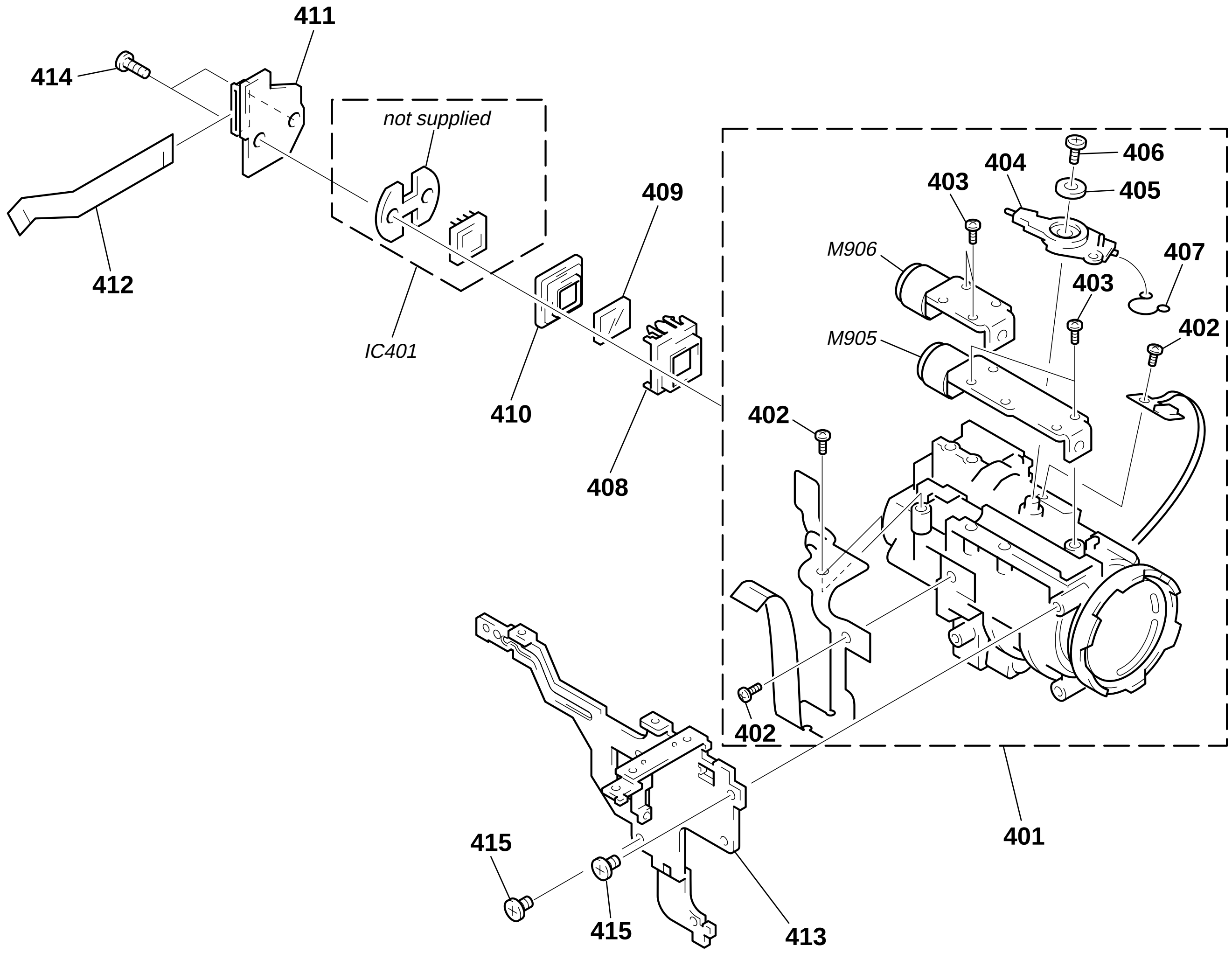
6-1-9. LCD BLOCK ASSEMBLY (TRV series)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
351	3-948-339-11	SCREW, TAPPING	
352	X-3948-162-1	CABINET (M) (870) ASSY, P	
353	3-053-206-01	FRAME (S), PANEL	
354	A-7073-804-A	PD-107 (C6P) BOARD, COMPLETE	
355	3-713-786-21	SCREW (M2 x 3)	
356	3-987-584-11	HOLDER (870), LCD	
357	4-981-286-01	SCREW (M1.7 x 2) (IB LOCK)	
358	1-668-963-21	FP-642 FLEXIBLE BOARD	
359	1-959-271-11	HARNESS (DP-108)	
360	3-053-205-01	CABINET (U), P	
361	3-053-203-01	CABINET (C), P (TRV36E/TRV46E)	
361	3-053-203-21	CABINET (C), P (TRV16E/TRV26E/TRV27E/TRV27EP)	
362	3-962-826-01	SCREW (2 x 4)	
363	3-987-625-01	COVER (M), HINGE	
364	3-948-339-01	SCREW, TAPPING	
365	X-3948-169-7	HINGE ASSY	
366	3-987-623-01	CLAMP, HARNESS	
367	3-503-204-01	COVER (C), HINGE (TRV36E/TRV46E)	
367	3-503-204-21	COVER (C), HINGE (TRV16E/TRV26E/TRV27E/TRV27EP)	
LCD901	1-803-356-21	MODULE, CRYSTAL INDICATION	
LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	
⚠ND801	1-517-752-11	TUBE, FLUORESCENT, COLD CATHODE	

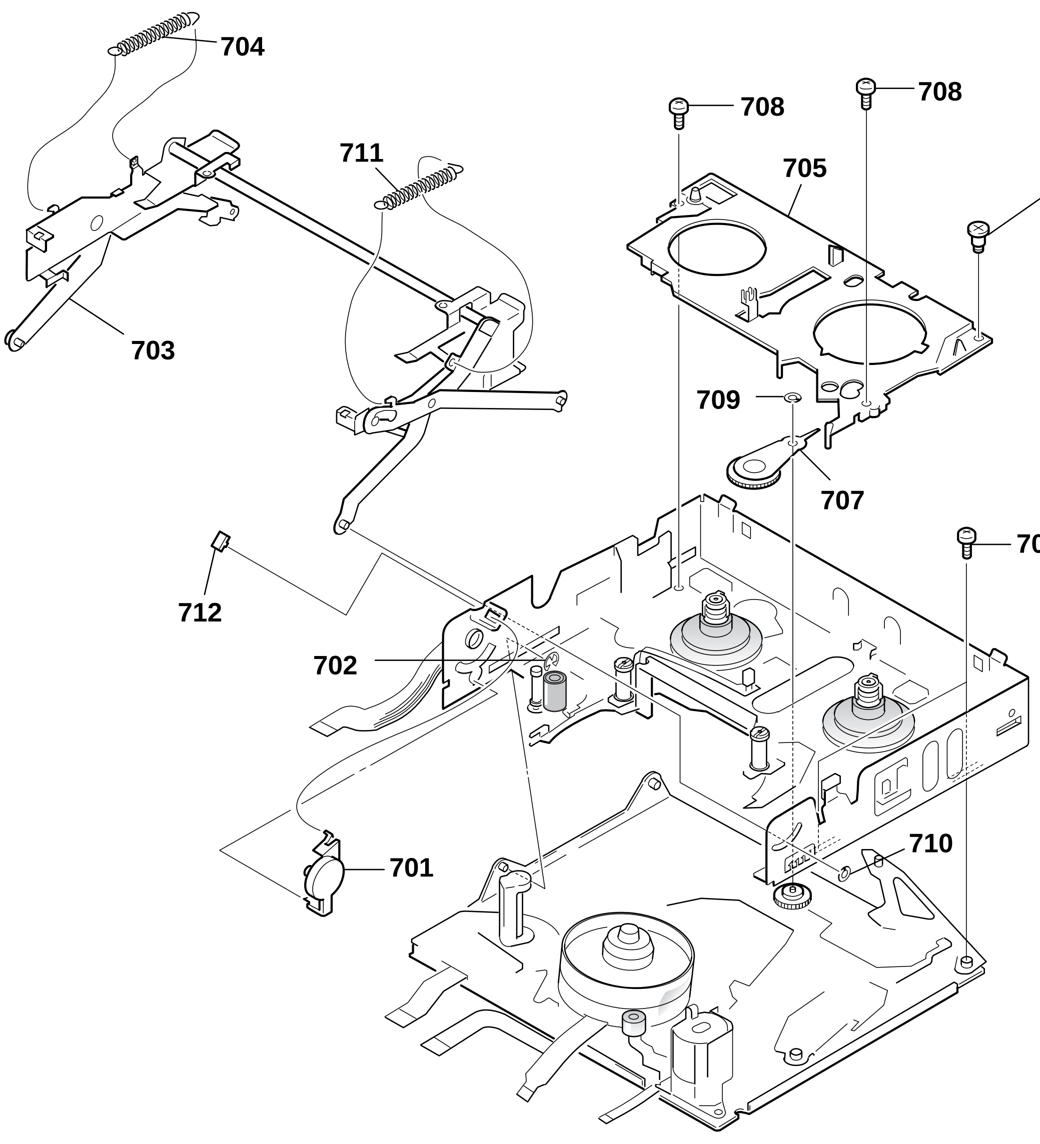
6-1-10. ZOOM LENS BLOCK ASSEMBLY



Be sure to read “Note on the CCD Imager replacement” on page 4–9 when changing the CCD imager.

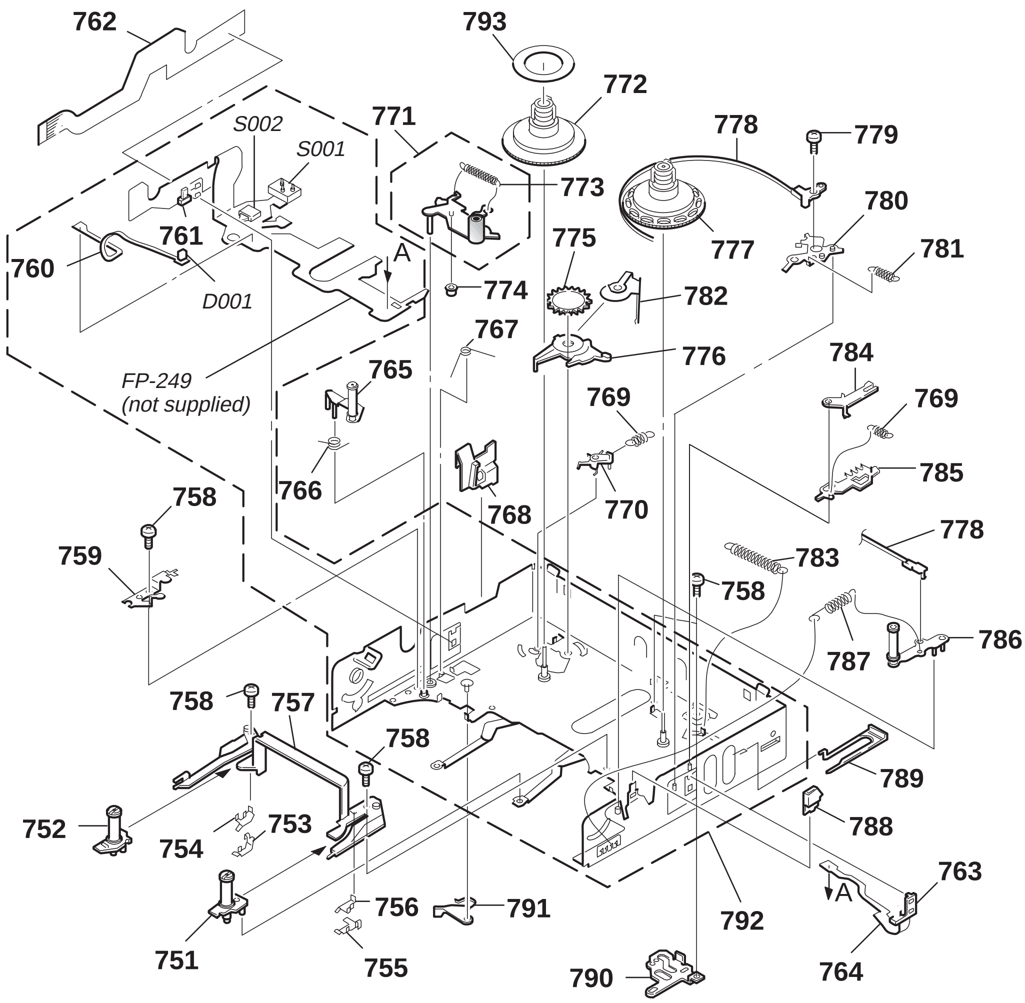
Ref. No.	Part No.	Description	Remark
401	8-848-722-01	DEVICE, LENS LSV-600A (SOC)	
402	3-713-791-51	SCREW (M1.7 x 3.5), TAPPING, P2	
403	3-713-791-41	SCREW (M1.7 x 5), TAPPING PS	
404	3-979-029-01	LEVER, IR	
405	2-327-405-01	WASHER	
406	2-623-756-21	SCREW (B1.7 x 5), P	
407	3-979-037-11	SPRING, RETURN	
408	3-978-981-11	ADAPTOR (FK), CCD FITTING	
409	1-758-133-21	FILTER BLOCK, OPTICAL	
410	3-953-817-01	RUBBER (F), SEAL	
411	A-7073-786-A	CD-210 (NT) BOARD, COMPLETE (TR series)	
411	A-7073-807-A	CD-211 (NT) BOARD, COMPLETE (TRV series)	
412	1-668-959-11	FP-623 FLEXIBLE BOARD	
413	3-987-712-01	FRAME, LENS	
414	3-318-203-11	SCREW (B1.7 x 6), TAPPING	
415	3-948-339-61	TAPPING	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 SERVICE) (Except TR713E/TRV46E)	
IC401	A-7030-962-A	CCD BLOCK ASSY (243 SERVICE) (TR713E/TRV46E)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	

6-1-9. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY		707	X-3945-399-1	GEAR ASSY, GOOSENECK	
702	7-624-102-04	STOP RING 1.5, TYPE -E		708	3-947-503-01	SCREW (M1.4 x 2.5)	
703	X-3945-400-X	CASSETTE COMPARTMENT ASSY		709	3-331-007-21	WASHER	
704	3-965-587-03	SPRING, TENSION		710	3-727-176-01	WASHER, STOPPER	
705	3-965-584-08	RETAINER, GOOSENECK					
				711	3-973-268-01	SPRING, TENSION	
706	3-976-055-01	SCREW (M1.4 x 1)		712	3-971-076-01	FASTENER, D	

6-1-10. LS CHASSIS ASSEMBLY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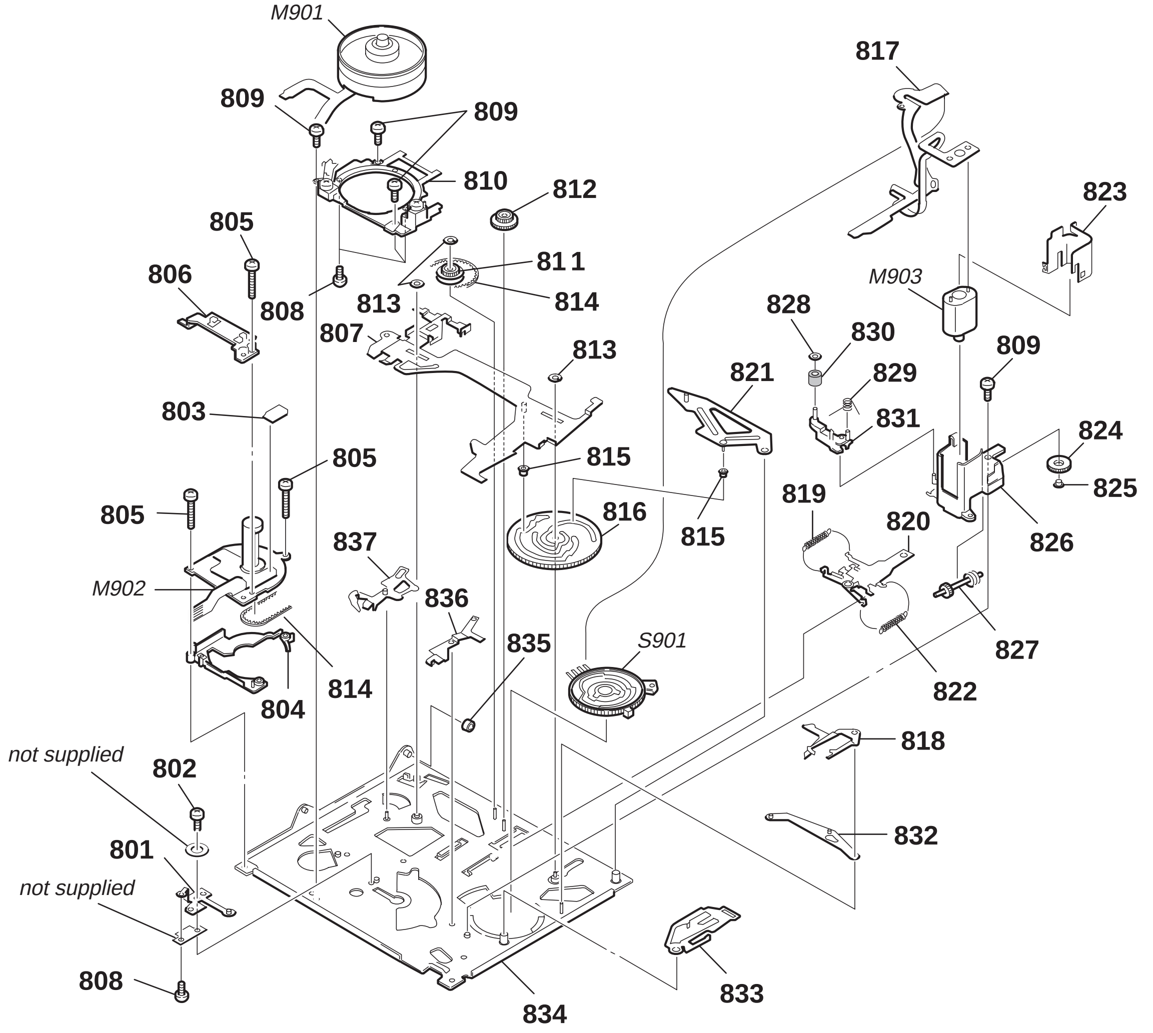
Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-03	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-2	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION COIL	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-11. MECHANISM CHASSIS ASSEMBLY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M902
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S901
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Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR (LIMITTER ARM T), COIL	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3947-915-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-875-A	DRUM ASSY (DGH-0E2A-R)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Abbreviation
  East European model is abbreviated as EE.
  North European model is abbreviated as NE.
  Russian model is abbreviated as RU.
  Hong Kong model is abbreviated as HK.
  Australian model is abbreviated as AUS.
  Chinese model is abbreviated as CN.
  Tourist model is abbreviated as JE.

Ref. No.	Part No.	Description	Remark
	A-7073-786-A	CD-210(NT) BOARD, COMPLETE **************************	
			(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E) (Ref. No. 4,000 Series)
	A-7073-807-A	CD-211(NT) BOARD, COMPLETE **************************	
			(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E) (Ref. No. 9,000 Series) (IC401 is not including to the mounted board.)
		< CAPACITOR >	
C401	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C405	1-135-210-11	TANTALUM CHIP 4.7uF 20%	10V
C406	1-135-214-21	TANTAL. CHIP 4.7uF 20%	20V
		< CONNECTOR >	
CN401	1-766-346-21	CONNECTOR, FFC/FPC 16P	
		< IC >	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 SERVICE)(CCD IMAGER)	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
IC401	A-7030-962-A	CCD BLOCK ASSY (243 SERVICE)(CCD IMAGER)	(TR713E/TRV46E)
		< COIL >	
L401	1-414-757-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q402	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1	
		< RESISTOR >	
R404	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R405	1-216-809-11	METAL CHIP 100 5%	1/16W
R406	1-216-864-11	METAL CHIP 0 5%	1/16W

Ref. No.	Part No.	Description	Remark
	A-7073-783-A	CF-60(CN) BOARD, COMPLETE (TR516E) *************************	
	A-7073-795-A	CF-60(P) BOARD, COMPLETE ************************	
			(TR415E/TR425E/TR515E/TR713E)
	A-7073-821-A	CF-60(N) BOARD, COMPLETE (TR315E) ************************	
			(Ref. No. 4,000 Series)
	A-7073-811-A	CF-61 BOARD, COMPLETE *********************	
			(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E) (Ref. No. 9,000 Series)
		< BATTERY HOLDER >	
BH001	1-550-104-11	HOLDER, BATTERY	
		< BUZZER >	
BZ002	1-529-104-21	BUZZER, PIEZOELECTRIC	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
		< CAPACITOR >	
C003	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V (TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
		< CONNECTOR >	
CN001	1-774-054-21	CONNECTOR, FFC/FPC (ZIF) 45P	
CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P	
* CN003	1-580-055-21	PIN, CONNECTOR (SMD) 2P	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN005	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN006	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN007	1-779-334-11	CONNECTOR, FFC/FPC 20P (TR516E)	
* CN008	1-778-283-11	CONNECTOR, FFC/FPC 4P	(TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN009	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)

Be sure to read "Note on the CCD Imager replacement" on page 4–9 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D001	8-719-062-16	DIODE 01ZA8.2(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D005	8-719-073-03	DIODE MA8082-(K8).S0	
D006	8-719-073-03	DIODE MA8082-(K8).S0	
D008	8-719-073-01	DIODE MA111-(K8).S0	
D010	8-719-073-03	DIODE MA8082-(K8).S0	
		< IC >	
IC001	8-759-573-02	IC BU9729K-E2	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
		< TRANSISTOR >	
Q001	8-729-402-42	TRANSISTOR UN5213-TX	(TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/ TRV27EP/TRV36E/TRV46E)
		< RESISTOR >	
R002	1-216-864-11	METAL CHIP 0 5% 1/16W	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R011	1-216-855-11	METAL CHIP 680K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R012	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R013	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R016	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R019	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R020	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R022	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R023	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R025	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R026	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R028	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R029	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R031	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R032	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R034	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R035	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R036	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R038	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R039	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R041	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R046	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R047	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R048	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R051	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R052	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S003	1-771-138-61	SWITCH, KEY BOARD (DATE)	
S004	1-771-029-21	SWITCH, TACTILE (PROGRAM AE)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
S006	1-771-138-61	SWITCH, KEY BOARD (PICTURE EFFECT)	
S008	1-771-138-61	SWITCH, KEY BOARD (COUNTER RESET)	
S010	1-771-029-21	SWITCH, TACTILE (MENU)	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
S010	1-771-138-61	SWITCH, KEY BOARD (MENU)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
S012	1-771-029-21	SWITCH, TACTILE (EXPOSURE)	
S013	1-771-138-61	SWITCH, KEY BOARD (END SEARCH)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
S015	1-771-025-21	SWITCH, ROTARY (SELECT DIAL)(ENCODER)	
S017	1-771-029-21	SWITCH, TACTILE (BACK LIGHT)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
S017	1-771-138-61	SWITCH, KEY BOARD (BACK LIGHT)	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
S018	1-771-138-61	SWITCH, KEY BOARD (TITLE)	
S020	1-762-442-21	SWITCH, ROTARY (AE DIAL)	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
S021	1-771-138-61	SWITCH, KEY BOARD (TIME)	
S022	1-771-138-61	SWITCH, KEY BOARD (DISPLAY)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
S024	1-762-648-21	SWITCH, SLIDE (START/STOP MODE)	

Ref. No.	Part No.	Description	Remark
	A-7073-785-A	DD-117(MMCB0) BOARD, COMPLETE (TR516E) ******************************	
	A-7073-791-A	DD-117(MMIB0) BOARD, COMPLETE (TR713E) ******************************	
	A-7073-806-A	DD-117(VMMIB0) BOARD, COMPLETE (TRV46E) *******************************	
	A-7073-818-A	DD-117(ZL0) BOARD, COMPLETE ****************************	(TR315E/TR415E/TR425E)
	A-7073-824-A	DD-117(VZB0) BOARD, COMPLETE (TRV36E) *****************************	
	A-7073-830-A	DD-117(ZB0) BOARD, COMPLETE (TR515E) ****************************	
	A-7073-874-A	DD-117(VZL0) BOARD, COMPLETE *****************************	(TRV16E/TRV26E/TRV27E/TRV27EP) (Ref. No. 2,000 Series)
		< CAPACITOR >	
C801	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C802	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C803	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C804	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C805	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C806	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C807	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C808	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C809	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C810	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C811	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	

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Ref. No.	Part No.	Description			Remark
C812	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C815	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C817	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C818	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C819	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C820	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C821	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C823	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C824	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C825	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C826	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C827	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C828	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C829	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C830	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C831	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C832	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C834	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C836	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C837	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C838	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C840	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C841	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C842	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C843	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C844	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C846	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C847	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C848	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C849	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C850	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C851	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C852	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C853	1-165-319-11	CERAMIC CHIP	0.1uF		50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C854	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
					(TR516E)
C855	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C857	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C860	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C861	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C861	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR516E)
C862	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C863	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C864	1-113-985-11	TANTAL. CHIP	10uF	20%	20V

Ref. No.	Part No.	Description			Remark
C865	1-117-720-11	CERAMIC CHIP	4.7uF		10V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C866	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C867	1-164-346-11	CERAMIC CHIP	1uF		16V
					(TR516E)
C868	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C869	1-164-505-11	CERAMIC CHIP	2.2uF		16V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C871	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C872	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C873	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C875	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C876	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C877	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
* CN801	1-580-756-21	PIN, CONNECTOR 7P			
CN931	1-774-597-41	CONNECTOR, BOARD TO BOARD 70P			
CN933	1-785-627-21	PIN, CONNECTOR (PC BOARD) 10P			
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN934	1-766-342-21	CONNECTOR, FFC/FPC 12P			
CN935	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
		< DIODE >			
D806	8-719-027-76	DIODE	1SS357-TPH3		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D809	8-719-027-77	DIODE	MA796-TX		
D810	8-719-027-76	DIODE	1SS357-TPH3		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D812	8-719-027-76	DIODE	1SS357-TPH3		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D813	8-719-073-03	DIODE	MA8082-(K8).S0		
D814	8-719-073-03	DIODE	MA8082-(K8).S0		
D815	8-719-073-03	DIODE	MA8082-(K8).S0		
D816	8-719-027-76	DIODE	1SS357-TPH3		
D817	8-719-073-02	DIODE	MA728-(K8).S0		
D818	8-719-027-76	DIODE	1SS357-TPH3		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D822	8-719-056-89	DIODE	MA8120-TX		
D933	8-719-062-16	DIODE	01ZA8.2(TPL3)		
D934	8-719-062-16	DIODE	01ZA8.2(TPL3)		
D936	8-719-062-16	DIODE	01ZA8.2(TPL3)		
		< FERRITE BEAD >			
FB931	1-414-760-21	FERRITE 0UH			
FB932	1-414-760-21	FERRITE 0UH			
FB933	1-414-760-21	FERRITE 0UH			
		< IC >			
IC801	8-759-384-78	IC	SN104241PM-TEB		
IC802	8-759-492-30	IC	MB3817PFV-G-BND		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
		< COIL >			
L804	1-412-056-11	INDUCTOR CHIP	4.7uH		
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
L805	1-409-532-41	INDUCTOR	33uH		
L805	1-424-675-51	INDUCTOR	33uH		
L806	1-409-532-41	INDUCTOR	33uH		

Ref. No.	Part No.	Description	Remark
L806	1-424-675-51	INDUCTOR 33uH	
L807	1-424-674-11	INDUCTOR 22uH	
L807	1-424-674-51	INDUCTOR 22uH	
L808	1-424-674-11	INDUCTOR 22uH	
L808	1-424-674-51	INDUCTOR 22uH	
L809	1-424-674-11	INDUCTOR 22uH	
L809	1-424-674-51	INDUCTOR 22uH	
L810	1-414-396-21	INDUCTOR 4.7uH	
L811	1-414-396-21	INDUCTOR 4.7uH	
L812	1-414-396-21	INDUCTOR 4.7uH	
L813	1-414-396-21	INDUCTOR 4.7uH	
L814	1-414-396-21	INDUCTOR 4.7uH	
L815	1-414-396-21	INDUCTOR 4.7uH	
L816	1-414-396-21	INDUCTOR 4.7uH	(TR516E)
L817	1-414-396-21	INDUCTOR 4.7uH	
L818	1-414-396-21	INDUCTOR 4.7uH	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
L819	1-414-400-11	INDUCTOR 22uH	
L820	1-424-674-11	INDUCTOR 22uH	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
L820	1-424-674-51	INDUCTOR 22uH	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
L821	1-412-056-11	INDUCTOR CHIP 4.7uH	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS801	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS803	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS804	1-576-286-21	FUSE, MICRO (1.4A)	
⚠PS805	1-576-286-21	FUSE, MICRO (1.4A)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
⚠PS806	1-576-286-21	FUSE, MICRO (1.4A)	(TR515E/TR516E/TR713E/TRV36E/TRV46E)

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q801	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q803	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q804	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q804	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q805	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q806	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q806	8-729-042-29	TRANSISTOR RN1104F(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q807	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q808	8-729-046-98	TRANSISTOR CPH6702-TL	
Q809	8-729-046-98	TRANSISTOR CPH6702-TL	
Q810	8-729-046-98	TRANSISTOR CPH6702-TL	
Q813	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q814	8-729-046-98	TRANSISTOR CPH6702-TL	
Q815	8-729-046-98	TRANSISTOR CPH6702-TL	
Q819	8-729-046-98	TRANSISTOR CPH6702-TL	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q823	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q823	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q826	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q826	8-729-042-29	TRANSISTOR RN1104F(TPL3)	(TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q827	8-729-037-61	TRANSISTOR RN2104F(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q828	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q828	8-729-042-29	TRANSISTOR RN1104F(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q829	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q830	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q831	8-729-041-23	TRANSISTOR NDS356AP	(TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q832	8-729-041-23	TRANSISTOR NDS356AP	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q833	8-729-041-23	TRANSISTOR NDS356AP	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q834	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q835	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q836	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q837	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR516E)
Q838	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q839	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q840	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q841	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TR516E)
Q842	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q843	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q844	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q845	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q846	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR516E)
Q847	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q848	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q849	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q850	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q851	8-729-046-77	TRANSISTOR SI4963DY-T1	
Q852	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q853	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q854	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q855	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q856	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q932	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR713E/TRV46E)
Q932	8-729-042-29	TRANSISTOR RN1104F(TPL3)	(TR713E/TRV46E)

< RESISTOR >

Ref. No.	Part No.	Description			
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W
R802	1-218-893-11	RES,CHIP	82K	0.50%	1/16W
R803	1-216-833-11	METAL CHIP	10K	5%	1/16W
R804	1-216-837-11	METAL CHIP	22K	5%	1/16W
R805	1-216-835-11	METAL CHIP	15K	5%	1/16W
R806	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R807	1-216-839-11	METAL CHIP	33K	5%	1/16W
R808	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R809	1-216-813-11	METAL CHIP	220	5%	1/16W
R810	1-216-837-11	METAL CHIP	22K	5%	1/16W
R811	1-218-883-11	RES,CHIP	33K	0.50%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R812	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R813	1-216-853-11	METAL CHIP	470K	5%	1/16W
R814	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R815	1-216-813-11	METAL CHIP	220	5%	1/16W
R816	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R817	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R818	1-216-813-11	METAL CHIP	220	5%	1/16W
R819	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W
R821	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R822	1-216-150-91	RES,CHIP	10	5%	1/8W
R824	1-216-837-11	METAL CHIP	22K	5%	1/16W
R825	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R826	1-216-821-11	METAL CHIP	1K	5%	1/16W
R827	1-216-821-11	METAL CHIP	1K	5%	1/16W
R828	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R830	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R831	1-216-841-11	METAL CHIP	47K	5%	1/16W
R832	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R833	1-216-839-11	METAL CHIP	33K	5%	1/16W
R834	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R835	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R836	1-216-837-11	METAL CHIP	22K	5%	1/16W
R837	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R838	1-216-837-11	METAL CHIP	22K	5%	1/16W
R839	1-216-837-11	METAL CHIP	22K	5%	1/16W
R840	1-216-839-11	METAL CHIP	33K	5%	1/16W
R841	1-216-834-11	METAL CHIP	12K	5%	1/16W
R842	1-218-903-11	RES,CHIP	220K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R843	1-218-895-11	RES,CHIP	100K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R844	1-216-296-91	SHORT	0		
R845	1-218-847-11	RES,CHIP	1K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R846	1-216-296-91	SHORT	0		
R847	1-216-296-91	SHORT	0		
R849	1-216-837-11	METAL CHIP	22K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R850	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R852	1-218-851-11	RES,CHIP	1.5K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R853	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R854	1-218-887-11	RES,CHIP	47K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R865	1-216-841-11	METAL CHIP	47K	5%	1/16W
R866	1-216-837-11	METAL CHIP	22K	5%	1/16W
R867	1-216-296-91	SHORT	0		(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R868	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R870	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-841-11	METAL CHIP	47K	5%	1/16W
R874	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R875	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R876	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R877	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR713E)
R878	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W
R880	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R882	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R883	1-216-841-11	METAL CHIP	47K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R884	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R885	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR516E)
R887	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R888	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R889	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR516E)
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W
R891	1-218-895-11	RES,CHIP	100K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R892	1-218-903-11	RES,CHIP	220K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R893	1-216-835-11	METAL CHIP	15K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R894	1-216-861-11	METAL CHIP	2.2M	5%	1/16W (TR516E)
R895	1-216-837-11	METAL CHIP	22K	5%	1/16W
R896	1-218-903-11	RES,CHIP	220K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R897	1-218-891-11	RES,CHIP	68K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R898	1-218-895-11	RES,CHIP	100K	0.50%	1/16W (TR516E)
R899	1-218-883-11	RES,CHIP	33K	0.50%	1/16W (TR516E)
R900	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R901	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R903	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R904	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R905	1-218-901-11	RES,CHIP	180K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R906	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R907	1-218-903-11	RES,CHIP	220K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R908	1-216-841-11	METAL CHIP	47K	5%	1/16W
R910	1-216-833-11	METAL CHIP	10K	5%	1/16W
R911	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R912	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R913	1-216-857-11	METAL CHIP	1M	5%	1/16W
R914	1-216-811-11	METAL CHIP	150	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R915	1-218-911-11	RES,CHIP	470K	0.50%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)

Ref. No.	Part No.	Description			Remark
R917	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R918	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R921	1-216-296-91	SHORT	0		
R922	1-216-296-91	SHORT	0		
R923	1-216-296-91	SHORT	0		
R924	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R925	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R933	1-216-821-11	METAL CHIP	1K	5%	1/16W
R934	1-216-821-11	METAL CHIP	1K	5%	1/16W
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W
R936	1-216-821-11	METAL CHIP	1K	5%	1/16W
R937	1-216-821-11	METAL CHIP	1K	5%	1/16W
R938	1-216-821-11	METAL CHIP	1K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W
R943	1-216-029-00	METAL CHIP	150	5%	1/10W
R944	1-216-864-11	METAL CHIP	0	5%	1/16W
		< TRANSFORMER >			
⚠T801	1-429-565-21	TRANSFORMER, CONVERTER			
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
⚠T801	1-431-749-21	TRANSFORMER, DC/DC CONVERTER			
					(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)

Ref. No.	Part No.	Description			Remark
	1-658-214-11	FP-249 FLEXIBLE BOARD			
		**********************			
					(Ref. No. 10,000 Series)
		< HALL ELEMENT >			
H001	8-719-033-37	ELEMENT, HALL HW-105C			
H002	8-719-033-37	ELEMENT, HALL HW-105C			
		< TRANSISTOR >			
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F			
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F			
		< SWITCH >			
S001	1-692-614-11	SWITCH, PUSH (3 KEY)			
					(Hi8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)			

Ref. No.	Part No.	Description			Remark
	1-658-213-11	FP-355 FLEXIBLE BOARD			
		**********************			
					(Ref. No. 10,000 Series)
		< DIODE >			
D001	8-719-988-42	DIODE GL453			

Ref. No.	Part No.	Description			Remark
	A-7073-439-A	LB-54 BOARD, COMPLETE (TR516E)			
		**********************			
					(Ref. No. 10,000 Series)
		< CAPACITOR >			
C5351	1-113-642-11	TANTAL. CHIP	47uF	20%	10V
C5352	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5353	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5354	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C5355	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
C5356	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V
		< CONNECTOR >			
CN5351	1-784-564-11	CONNECTOR, BOARD TO BOARD 12P			
		< COIL >			
L5351	1-412-031-11	INDUCTOR CHIP	47uH		
L5352	1-412-029-11	INDUCTOR CHIP	10uH		
		< FLUORESCENT INDICATOR >			
⚠ND5351	1-517-325-21	LAMP, FLUORESCENT (0.55 INCH)			
		< TRANSISTOR >			
Q5351	8-729-039-24	TRANSISTOR FX216-TL1			
		< RESISTOR >			
R5351	1-216-839-11	METAL CHIP	33K	5%	1/16W
		< TRANSFORMER >			
⚠T5351	1-426-849-41	TRANSFORMER, INVERTER			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

MA-345/346

Ref. No.	Part No.	Description	Remark
	A-7073-782-A	MA-345(B) BOARD, COMPLETE ***************************	(TR515E/TR516E)
	A-7073-794-A	MA-345(IB) BOARD, COMPLETE (TR713E) ****************************	
	A-7073-820-A	MA-345(SL) BOARD, COMPLETE ****************************	(TR315E/TR415E)
	A-7073-888-A	MA-345(Z0) BOARD, COMPLETE (TR425E) ****************************	
			(Ref. No. 9,000 Series)
	A-7073-812-A	MA-346(VIB) BOARD, COMPLETE (TRV46E) *****************************	
	A-7073-823-A	MA-346(VZB) BOARD, COMPLETE (TRV36E) *****************************	
	A-7073-873-A	MA-346(VZL) BOARD, COMPLETE *****************************	(TRV16E/TRV26E)
	A-7073-889-A	MA-346(V) BOARD, COMPLETE ***************************	(TRV27E/TRV27EP) (Ref. No. 4,000 Series)
		< CAPACITOR >	
C301	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	(TR713E/TRV46E)
C302	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TR713E/TRV46E)
C303	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TR713E/TRV46E)
C304	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TR713E/TRV46E)
C305	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TR713E/TRV46E)
C331	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C333	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C335	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	
C336	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C337	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C338	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C341	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C342	1-119-749-11	TANTAL. CHIP 33uF 20% 4V	
C348	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C349	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C355	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C367	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C368	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C369	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C370	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C371	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		< CONNECTOR >	
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN303	1-764-526-11	CONNECTOR, FFC/FPC 18P	
		< DIODE >	
D301	8-719-061-86	DIODE DCR2810 (TR713E/TRV46E)	
D302	8-749-060-65	DIODE DCC3810	
D303	8-719-061-82	DIODE TLSU1002(TPX1,SONY)	
D305	8-719-073-01	DIODE MA111-(K8).S0	(TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E)
D309	8-719-067-44	DIODE CL-310IRS-X-TU	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
D331	8-719-073-03	DIODE MA8082-(K8).S0	
D333	8-719-073-01	DIODE MA111-(K8).S0	
		< FUSE >	
⚠F301	1-533-874-21	FUSE, MICRO (200mA/24V)	
		< IC >	
IC301	8-749-012-83	IC RS-180-T	(TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E)
IC332	8-759-339-63	IC NJM2118V-TE2	
		< JACK >	
J301	1-568-027-11	JACK, SMALL TYPE (MIC (PLUG IN POWER))	
		< COIL >	
L301	1-216-295-91	SHORT 0	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
L301	1-414-754-11	INDUCTOR 10uH (TR713E/TRV46E)	
		< TRANSISTOR >	
Q301	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	(TR713E/TRV46E)
Q301	8-729-422-51	TRANSISTOR UN5110-QRS-TX	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
Q302	8-729-122-63	TRANSISTOR 2SA1226-T1E4	(TR713E/TRV46E)
Q303	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK	
Q304	8-729-402-42	TRANSISTOR UN5213-TX	
Q305	8-729-402-42	TRANSISTOR UN5213-TX	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
Q331	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	
Q332	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R301	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TR713E/TRV46E)
R302	1-216-810-11	METAL CHIP 120 5% 1/16W	(TR713E/TRV46E)
R303	1-216-817-11	METAL CHIP 470 5% 1/16W	
R304	1-216-309-00	METAL CHIP 5.6 5% 1/10W	(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
R304	1-216-311-00	METAL CHIP 6.8 5% 1/10W	(TR713E/TRV46E)
R305	1-216-302-00	METAL CHIP 2.7 5% 1/10W	
R306	1-216-864-11	METAL CHIP 0 5% 1/16W	
R308	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R309	1-216-847-11	METAL CHIP 150K 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R310	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R311	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TR425E/TR515E/TR516E/TR713E/TRV27E/TRV27EP/TRV36E/TRV46E)			
R312	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR713E/TRV46E)
R313	1-216-864-11	METAL CHIP	0	5%	1/16W
R314	1-216-815-11	METAL CHIP	330	5%	1/16W
		(TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)			
R315	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR713E/TRV46E)
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R332	1-216-817-11	METAL CHIP	470	5%	1/16W
R334	1-216-864-11	METAL CHIP	0	5%	1/16W
R335	1-216-864-11	METAL CHIP	0	5%	1/16W
R338	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R341	1-216-838-11	METAL CHIP	27K	5%	1/16W
R342	1-216-838-11	METAL CHIP	27K	5%	1/16W
R344	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R345	1-216-803-11	METAL CHIP	33	5%	1/16W
R367	1-216-841-11	METAL CHIP	47K	5%	1/16W
R368	1-216-841-11	METAL CHIP	47K	5%	1/16W
R369	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
		< SWITCH >			
S301	1-692-605-11	SWITCH, SLIDE (LIGHT ON/OFF)			
		(TR515E/TR516E/TR713E/TRV36E/TRV46E)			
S302	1-771-040-21	SWITCH, PUSH (POWER (PLAYER))			
S303	1-771-039-11	SWITCH, PUSH (POWER (CAMERA))			

Ref. No.	Part No.	Description			Remark
	A-7073-804-A	PD-107(C6P) BOARD, COMPLETE			
		*****************************			
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
		(Ref. No. 10,000 Series)			
		< CAPACITOR >			
C5501	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5502	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5506	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C5507	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5508	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5509	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C5511	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5512	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5513	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5514	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C5515	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C5516	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C5517	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5519	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5520	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5601	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5602	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C5603	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C5604	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5605	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5607	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C5608	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C5610	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C5612	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C5616	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C5620	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5621	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C5622	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C5623	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5624	1-107-688-11	TANTAL. CHIP	1.5uF	20%	10V
C5625	1-107-688-11	TANTAL. CHIP	1.5uF	20%	10V
C5633	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C5701	1-104-911-11	TANTAL. CHIP	33uF	20%	10V
C5702	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5703	1-164-661-11	CERAMIC CHIP	0.018uF	10%	50V
C5704	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
⚠C5705	1-113-521-91	CERAMIC CHIP	12PF	10%	3KV
C5706	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5801	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
* CN5501	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P			
CN5601	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P			
CN5701	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN5801	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P			
CN5802	1-785-627-21	PIN, CONNECTOR (PC BOARD) 10P			
CN5803	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P			
CN5804	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P			
CN5805	1-766-336-21	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D5604	8-719-422-23	DIODE MA8047-TX			
D5605	8-713-102-80	DIODE 1T369-01-T8A			
D5703	8-719-058-86	DIODE PG1101H-TR			
D5704	8-719-073-01	DIODE MA111-(K8).S0			
		< FERRITE BEAD >			
FB5502	1-500-238-22	FERRITE 0UH			
FB5503	1-500-238-22	FERRITE 0UH			
FB5603	1-500-238-22	FERRITE 0UH			
FB5604	1-500-238-22	FERRITE 0UH			
		< IC >			
IC5501	8-759-530-19	IC MB40D001PFV-G-BND-ER			
IC5502	8-759-539-27	IC IR3Y37A4			
IC5601	8-759-530-20	IC CM7017L3-T4			
IC5602	8-759-327-01	IC NJM062V(TE2)			
IC5701	8-759-075-70	IC TA75S393F-TE85R			
IC5801	8-759-573-02	IC BU9729K-E2			
		< COIL >			
L5501	1-414-754-11	INDUCTOR	10uH		
L5601	1-414-754-11	INDUCTOR	10uH		
L5605	1-412-957-11	INDUCTOR	33uH		
L5701	1-416-919-21	INDUCTOR	150uH		
		< TRANSISTOR >			
Q5501	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX			
Q5601	8-729-402-42	TRANSISTOR UN5213-TX			
Q5602	8-729-402-42	TRANSISTOR UN5213-TX			
Q5605	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
Q5606	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX		
Q5607	8-729-230-63	TRANSISTOR	2SD1819A-QRS-TX		
Q5608	8-729-420-24	TRANSISTOR	2SB1218A-QRS-TX		
Q5701	8-729-039-43	TRANSISTOR	FP216-TL		
Q5702	8-729-015-74	TRANSISTOR	UN5111-TX		
		< RESISTOR >			
R5501	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5505	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5512	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5513	1-216-834-11	METAL CHIP	12K	5%	1/16W
R5516	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5517	1-216-835-11	METAL CHIP	15K	5%	1/16W
R5518	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5520	1-216-852-11	METAL CHIP	390K	5%	1/16W
R5521	1-216-834-11	METAL CHIP	12K	5%	1/16W
R5522	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5528	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R5531	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5532	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5537	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R5541	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R5542	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R5544	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5545	1-216-864-11	METAL CHIP	0	5%	1/16W
R5602	1-216-864-11	METAL CHIP	0	5%	1/16W
R5603	1-216-864-11	METAL CHIP	0	5%	1/16W
R5604	1-216-864-11	METAL CHIP	0	5%	1/16W
R5605	1-216-864-11	METAL CHIP	0	5%	1/16W
R5610	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5612	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5613	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5615	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5617	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5622	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5623	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5624	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5625	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R5627	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R5628	1-216-864-11	METAL CHIP	0	5%	1/16W
R5630	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5641	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5643	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5644	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5647	1-216-864-11	METAL CHIP	0	5%	1/16W
R5648	1-216-864-11	METAL CHIP	0	5%	1/16W
R5652	1-216-864-11	METAL CHIP	0	5%	1/16W
R5663	1-216-864-11	METAL CHIP	0	5%	1/16W
R5664	1-216-864-11	METAL CHIP	0	5%	1/16W
R5665	1-216-864-11	METAL CHIP	0	5%	1/16W
R5666	1-216-864-11	METAL CHIP	0	5%	1/16W
R5667	1-216-864-11	METAL CHIP	0	5%	1/16W
R5668	1-216-864-11	METAL CHIP	0	5%	1/16W
R5672	1-216-849-11	METAL CHIP	220K	5%	1/16W
R5673	1-216-864-11	METAL CHIP	0	5%	1/16W
R5678	1-216-864-11	METAL CHIP	0	5%	1/16W
R5682	1-216-805-11	METAL CHIP	47	5%	1/16W
R5683	1-216-805-11	METAL CHIP	47	5%	1/16W
R5684	1-216-805-11	METAL CHIP	47	5%	1/16W
R5685	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5686	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5688	1-216-864-11	METAL CHIP	0	5%	1/16W
R5692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5694	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5695	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5697	1-216-864-11	METAL CHIP	0	5%	1/16W
R5698	1-216-864-11	METAL CHIP	0	5%	1/16W
R5703	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5704	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5705	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5706	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R5707	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5708	1-216-810-11	METAL CHIP	120	5%	1/16W
R5709	1-216-817-11	METAL CHIP	470	5%	1/16W
R5710	1-216-864-11	METAL CHIP	0	5%	1/16W
R5801	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R5802	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R5803	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R5804	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R5805	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5806	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R5811	1-216-864-11	METAL CHIP	0	5%	1/16W
R5812	1-216-855-11	METAL CHIP	680K	5%	1/16W
		< SWITCH >			
S5801	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)			
S5802	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT -)			
S5803	1-692-088-41	SWITCH, TACTILE (VOLUME +)			
S5804	1-692-088-41	SWITCH, TACTILE (VOLUME -)			
		< TRANSFORMER >			
⚠T5701	1-433-452-11	TRANSFORMER, INVERTER			

	A-7073-788-A	PJ-90 BOARD, COMPLETE **********************			
					(TR315E/TR516E)
	A-7073-793-A	PJ-90(CE) BOARD, COMPLETE **************************			
					(TR415E/TR425E/TR515E/TR713E) (Ref. No. 4,000 Series)
	A-7073-802-A	PJ-91(VCE) BOARD, COMPLETE ***************************			
					(TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)
	A-7073-809-A	PJ-91(V) BOARD, COMPLETE *************************			
					(TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN) (Ref. No. 9,000 Series)
		< CAPACITOR >			
C101	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C103	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV27EP/TRV36E/ TRV46E:AEP,UK,EE,NE,RU)
C104	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV27EP/TRV36E/ TRV46E:AEP,UK,EE,NE,RU)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN101	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P	
		< DIODE >	
D102	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D103	8-719-062-16	DIODE 01ZA8.2(TPL3)	
		< JACK >	
J101	1-537-747-41	TERMINAL BOARD (VIDEO/AUDIO)	
		< COIL >	
L101	1-414-072-11	INDUCTOR 1uH	
L102	1-216-295-91	SHORT 0	(TR315E/TR516E/TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN)
L102	1-412-963-11	INDUCTOR 100uH	(TR415E/TR425E/TR515E/TR713E/TRV26E/TRV27E/TRV36E/ TRV46E:AEP,UK,EE,NE,RU)
		< TRANSISTOR >	
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
Q102	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R101	1-216-864-11	METAL CHIP 0 5% 1/16W	
R102	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R103	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R104	1-216-820-11	METAL CHIP 820 5% 1/16W	
R105	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R109	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
	A-7073-789-A	SE-80(MM) BOARD, COMPLETE (TR713E) ***************************	(Ref. No. 4,000 Series)
	A-7073-803-A	SE-81(VMMCE) BOARD, COMPLETE ******************************	(TRV46E:AEP,UK,EE,NE,RU)
	A-7073-810-A	SE-81(VMM) BOARD, COMPLETE ****************************	(TRV46E:E,HK,AUS,CN)
	A-7073-825-A	SE-81(V) BOARD, COMPLETE **************************	(TRV16E/TRV27EP)
	A-7073-849-A	SE-81(VCE) BOARD, COMPLETE ****************************	(TRV26E/TRV27E/TRV36E) (Ref. No. 9,000 Series)
		< CAPACITOR >	
C451	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR713E/TRV46E)
C452	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR713E/TRV46E)
C453	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(TR713E/TRV46E)
C454	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(TR713E/TRV46E)
C457	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR713E/TRV46E)
C458	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR713E/TRV46E)
C459	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR713E/TRV46E)
C460	1-110-666-11	ELECT CHIP 22uF 20% 6.3V	(TR713E/TRV46E)
C461	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	(TR713E/TRV46E)
C462	1-110-666-11	ELECT CHIP 22uF 20% 6.3V	(TR713E/TRV46E)
C464	1-110-501-11	CERAMIC CHIP 0.33uF 10% 16V	(TR713E/TRV46E)
C465	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR713E/TRV46E)
C466	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR713E/TRV46E)
C467	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	(TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)
C468	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	(TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)
		< CONNECTOR >	
CN451	1-766-646-21	CONNECTOR, FFC/FPC 10P	(TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
		< DIODE >	
D451	8-719-062-16	DIODE 01ZA8.2(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
		< IC >	
IC451	8-759-489-19	IC uPC6756GR-8JG-E2	(TR713E/TRV46E)
		< JACK >	
J451	1-695-514-11	JACK (SMALL TYPE) 1P (HEADPHONE)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
		< COIL >	
L451	1-414-754-11	INDUCTOR 10uH	(TR713E/TRV46E)
L453	1-216-295-91	SHORT 0	(TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN)
L453	1-412-963-11	INDUCTOR 100uH	(TRV26E/TRV27E/TRV36E/TRV46E:AEP,UK,EE,NE,RU)
		< RESISTOR >	
R451	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR713E/TRV46E)
R452	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR713E/TRV46E)
R453	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR713E/TRV46E)
R454	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR713E/TRV46E)
R455	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR713E/TRV46E)
R456	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR713E/TRV46E)
R458	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR713E/TRV46E)
R459	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR713E/TRV46E)
R461	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR713E/TRV46E)
R463	1-216-809-11	METAL CHIP 100 5% 1/16W	(TR713E/TRV46E)

Ref. No.	Part No.	Description	Remark
		< SENSOR >	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (PITCH)	(TR713E/TRV46E)
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (YAW)	(TR713E/TRV46E)
	A-7094-113-A	VC-215 (ZSL0PE) BOARD, COMPLETE *********************************	(TR315E/TR415E/TR425E)
	A-7094-114-A	VC-215(ZB0) BOARD, COMPLETE (TR515E) ****************************	
	A-7094-115-A	VC-215 (ZCB0) BOARD, COMPLETE (TR516E) ******************************	
	A-7094-116-A	VC-215(MMIB0) BOARD, COMPLETE (TR713E) ******************************	
	A-7094-119-A	VC-215(VMMIB0P) BOARD, COMPLETE *********************************	(TRV46E)
	A-7094-120-A	VC-215(VZLB0) BOARD, COMPLETE (TRV36E) **	
	A-7094-203-A	VC-215(VZL0P) BOARD, COMPLETE ******************************	(TRV16E/TRV26E/TRV27E/TRV27EP) (Ref. No. 1,000 Series)
		< CAPACITOR >	
C001	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C004	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C006	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C007	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C008	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C009	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C010	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C011	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C012	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C017	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C018	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C019	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C021	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C022	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C023	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C024	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C026	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C027	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C028	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C029	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C030	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C031	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C032	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C033	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C034	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C035	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	
C036	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C037	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C039	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C041	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C042	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C043	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C048	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C049	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C050	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C052	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C053	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C055	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C058	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C059	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C060	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C061	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C062	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C065	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C068	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C069	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C070	1-162-908-11	CERAMIC CHIP 3PF 0.25PF 50V	
C071	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C072	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C073	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C074	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C075	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C075	1-164-315-11	CERAMIC CHIP 470PF 5% 50V	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
C076	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C078	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C079	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C080	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C080	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
C081	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C082	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C083	1-162-924-11	CERAMIC CHIP 56PF 5% 50V	
C085	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C086	1-115-156-11	CERAMIC CHIP 1uF 10V	
C088	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
C088	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C089	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
C089	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
C090	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C152	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C156	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
C158	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C159	1-164-346-11	CERAMIC CHIP 1uF 16V	
C160	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C161	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C163	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C166	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C168	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C169	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C170	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C182	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	

Ref. No.	Part No.	Description			Remark
C184	1-115-156-11	CERAMIC CHIP	1uF		10V
C185	1-126-246-11	ELECT CHIP	220uF	20%	4V
C188	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C190	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C191	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C192	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C202	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-115-156-11	CERAMIC CHIP	1uF		10V
C206	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C207	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C209	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
		(TR515E/TR516E/TR713E/TRV36E/TRV46E)			
C209	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
		(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)			
C210	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
		(TR515E/TR516E/TR713E/TRV36E/TRV46E)			
C211	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C212	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C219	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C224	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C226	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C227	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C230	1-115-156-11	CERAMIC CHIP	1uF		10V
C232	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C233	1-162-638-11	CERAMIC CHIP	1uF		16V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C239	1-115-156-11	CERAMIC CHIP	1uF		10V
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-162-638-11	CERAMIC CHIP	1uF		16V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C301	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C304	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C307	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C308	1-162-638-11	CERAMIC CHIP	1uF		16V
C309	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C312	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C316	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C318	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C319	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C320	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C322	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C328	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C332	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C333	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C335	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C337	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C338	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C340	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C342	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C346	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C371	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C372	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C378	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C380	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C381	1-164-346-11	CERAMIC CHIP	1uF		16V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C382	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C383	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C384	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C385	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C386	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C387	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C388	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
		(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)			
C402	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C405	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C411	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C412	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C415	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C417	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C419	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C451	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C452	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C453	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C454	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C455	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C456	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C457	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C458	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C459	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C461	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C462	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C463	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C464	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C465	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C467	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C468	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C469	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C472	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C473	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V

Ref. No.	Part No.	Description			Remark
C474	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C475	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C476	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C478	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C479	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C480	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C481	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C483	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C484	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C485	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C486	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C487	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C488	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C489	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C503	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C504	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C506	1-115-156-11	CERAMIC CHIP	1uF		10V
C507	1-115-156-11	CERAMIC CHIP	1uF		10V
C509	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C511	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C512	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C513	1-115-156-11	CERAMIC CHIP	1uF		10V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C516	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C517	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C519	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C522	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C523	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C524	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C526	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C527	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C528	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C529	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C530	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C531	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C552	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C553	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C554	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C555	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C556	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C557	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C558	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C559	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C560	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C561	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C562	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C563	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C564	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C565	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C566	1-115-156-11	CERAMIC CHIP	1uF		10V
C567	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C569	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

Ref. No.	Part No.	Description			Remark
C570	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C571	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C572	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C605	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C610	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C613	1-162-638-11	CERAMIC CHIP	1uF		16V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C622	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C624	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C626	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C627	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C628	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C629	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C630	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C636	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C637	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C751	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
					(TR713E/TRV46E)
C752	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
					(TR713E/TRV46E)
C753	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C754	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
					(TR713E/TRV46E)
C755	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
					(TR713E/TRV46E)
C756	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C757	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
					(TR713E/TRV46E)
C758	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
					(TR713E/TRV46E)
C759	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C760	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
					(TR713E/TRV46E)
C761	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C762	1-164-668-11	CERAMIC CHIP	510PF	5%	50V
					(TR713E/TRV46E)
C763	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C764	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
					(TR713E/TRV46E)
C765	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR713E/TRV46E)
C766	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
					(TR713E/TRV46E)
C767	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
					(TR713E/TRV46E)

Ref. No.	Part No.	Description	Remark
C768	1-162-909-11	CERAMIC CHIP 4PF 0.25PF 50V	(TR713E/TRV46E)
C769	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(TR713E/TRV46E)
C770	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	(TR713E/TRV46E)
C771	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(TR713E/TRV46E)
C772	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(TR713E/TRV46E)
C773	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR713E/TRV46E)
C774	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(TR713E/TRV46E)
C775	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	(TR713E/TRV46E)
C776	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR713E/TRV46E)
C777	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR713E/TRV46E)
C778	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR713E/TRV46E)
C781	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(TR713E/TRV46E)
		< CONNECTOR >	
CN001	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN501	1-779-332-11	CONNECTOR, FFC/FPC 16P	
CN551	1-573-363-21	CONNECTOR, FFC/FPC 23P	
CN551	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P	
CN901	1-766-644-21	CONNECTOR, FFC/FPC 8P	
CN902	1-766-342-21	CONNECTOR, FFC/FPC 12P	
CN904	1-691-374-11	CONNECTOR, FFC/FPC 10P	(TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
CN905	1-766-646-21	CONNECTOR, FFC/FPC 10P	
CN906	1-766-342-21	CONNECTOR, FFC/FPC 12P	
CN908	1-766-345-21	CONNECTOR, FFC/FPC 15P	
CN908	1-774-639-21	CONNECTOR, FFC/FPC 15P	
CN909	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
CN910	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN911	1-785-760-21	CONNECTOR, FFC/FPC (ZIF) 45P	
CN915	1-774-600-41	CONNECTOR, BOARD TO BOARD 70P	
CN916	1-766-348-21	CONNECTOR, FFC/FPC 18P	
		< DIODE >	
D002	8-719-073-01	DIODE MA111-(K8).S0	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
D201	8-719-055-86	DIODE KV1470TL1-3	
D202	8-719-055-86	DIODE KV1470TL1-3	
D371	8-719-073-01	DIODE MA111-(K8).S0	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
D502	8-713-103-84	DIODE 1T379-01-T8A	
D551	8-719-073-01	DIODE MA111-(K8).S0	
D601	8-719-073-02	DIODE MA728-(K8).S0	
D602	8-719-073-02	DIODE MA728-(K8).S0	
D604	8-719-073-01	DIODE MA111-(K8).S0	
D608	8-719-073-01	DIODE MA111-(K8).S0	
D609	8-719-049-09	DIODE 1SS367-T3SONY	
D610	8-719-073-02	DIODE MA728-(K8).S0	

Ref. No.	Part No.	Description	Remark
		< FERRITE BEAD >	
FB001	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB002	1-414-229-11	INDUCTOR CHIP 0uH	
FB003	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB004	1-414-229-11	INDUCTOR CHIP 0uH	
FB201	1-414-228-11	INDUCTOR CHIP 0uH	
FB401	1-414-229-11	INDUCTOR CHIP 0uH	
FB502	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB503	1-500-284-21	INDUCTOR CHIP 0uH	
FB504	1-500-284-21	INDUCTOR CHIP 0uH	
FB505	1-500-284-21	INDUCTOR CHIP 0uH	
		< IC >	
IC001	8-752-079-46	IC CXA2084R-T6	
IC151	8-752-075-46	IC CXA2030R-T6	
IC152	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC152	8-759-536-93	IC M62371GP-600D	
IC201	8-759-494-73	IC MB90097PFV-G-104-ER	
IC202	8-759-494-55	IC MB87F126DPFF-G-BND	
IC301	8-759-494-30	IC AN2984FH-EB	
IC371	8-759-494-52	IC BA7783FS-E2	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
IC401	8-759-445-94	IC AK6480AM-E2	
IC402	8-759-574-45	IC MB91191PFF-G-130-BND-ER	
IC451	8-759-327-67	IC LB1950V-TLM	
IC452	8-759-327-62	IC TA8482FN-EL	
IC501	8-752-384-70	IC CXD2486R-T4	
IC502	8-759-534-77	IC AD9800JDSTRL	
IC551	8-759-444-87	IC NJM324V(TE2)	
IC552	8-759-492-31	IC MPC17A134VMEL	
IC602	8-759-424-79	IC S-8423YFS-T2	
IC603	8-759-536-72	IC TL1596CPWR	
IC604	8-759-574-83	IC S579225PZ-TEB	
IC751	8-759-498-52	IC LA9511W-TBM	(TR713E/TRV46E)
		< COIL >	
L001	1-414-406-11	INDUCTOR 220uH	
L002	1-412-952-11	INDUCTOR 12uH	
L003	1-414-406-11	INDUCTOR 220uH	
L004	1-414-754-11	INDUCTOR 10uH	
L005	1-412-948-11	INDUCTOR 5.6uH	
L006	1-412-963-11	INDUCTOR 100uH	
L008	1-412-280-31	INDUCTOR 330uH	
L009	1-410-656-11	INDUCTOR CHIP 150uH	
L010	1-410-657-21	INDUCTOR CHIP 180uH	
L011	1-412-956-21	INDUCTOR 27uH	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
L012	1-412-955-11	INDUCTOR 22uH	
L013	1-412-944-11	INDUCTOR 2.7uH	
L015	1-412-951-11	INDUCTOR 10uH	
L016	1-412-946-11	INDUCTOR 3.9uH	
L018	1-410-656-11	INDUCTOR CHIP 150uH	
L019	1-412-957-11	INDUCTOR 33uH	
L204	1-410-658-31	INDUCTOR CHIP 220uH	
L205	1-412-955-11	INDUCTOR 22uH	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
L205	1-412-957-11	INDUCTOR 33uH	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
L206	1-412-945-11	INDUCTOR 3.3uH	
L502	1-216-295-91	SHORT 0	
L552	1-414-398-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
L602	1-414-754-11	INDUCTOR 10uH	
L751	1-412-948-11	INDUCTOR 5.6uH (TR713E/TRV46E)	
L752	1-412-957-11	INDUCTOR 33uH (TR713E/TRV46E)	
L753	1-412-957-11	INDUCTOR 33uH (TR713E/TRV46E)	
		< TRANSISTOR >	
Q001	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q002	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q003	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q012	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q017	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q019	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q020	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q021	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q022	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q023	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q024	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q025	8-729-037-89	TRANSISTOR 2SC4627J-C(K8).S0	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q027	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q028	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q029	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q030	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q032	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q033	8-729-047-19	TRANSISTOR 2SA1965-S-TL	
Q034	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q036	8-729-037-89	TRANSISTOR 2SC4627J-C(K8).S0	
Q038	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q039	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q040	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q041	8-729-230-72	TRANSISTOR 2SA1362-YG-EL	
Q042	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q043	8-729-047-19	TRANSISTOR 2SA1965-S-TL	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q044	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q151	8-729-037-61	TRANSISTOR RN2104F(TPL3)	
Q153	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	
Q202	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q203	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q204	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q205	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q208	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q213	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q214	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q215	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q216	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR516E)
Q217	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q302	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
Q302	8-729-045-78	TRANSISTOR RN1110F(TPL3)	
Q305	8-729-037-63	TRANSISTOR UN9115J-(K8).SO	
Q306	8-729-037-76	TRANSISTOR UN9215J-(K8).SO	
Q308	8-729-037-61	TRANSISTOR RN2104F(TPL3)	
Q309	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q309	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q371	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
Q371	8-729-045-78	TRANSISTOR RN1110F(TPL3)	
Q452	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q452	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q453	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q453	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q454	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q455	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q456	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q501	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q551	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
Q552	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q553	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
Q607	8-729-041-43	TRANSISTOR HN1L02FU(TE85R)	
Q608	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
Q609	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TR713E/TRV46E)
Q610	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q610	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
Q611	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR713E/TRV46E)
Q620	8-729-042-58	TRANSISTOR UN9111J-(K8).SO	
		< RESISTOR >	
R001	1-216-864-11	METAL CHIP 0 5% 1/16W	
R002	1-216-864-11	METAL CHIP 0 5% 1/16W	
R003	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R003	1-216-806-11	RES,CHIP 56 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R004	1-216-818-11	METAL CHIP 560 5% 1/16W	
R005	1-216-809-11	METAL CHIP 100 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R006	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R007	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
R008	1-216-814-11	METAL CHIP 270 5% 1/16W	
R009	1-216-813-11	METAL CHIP 220 5% 1/16W	
R014	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R015	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R020	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R021	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R022	1-216-295-91	SHORT 0	
R023	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R025	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R026	1-216-816-11	METAL CHIP 390 5% 1/16W	
R027	1-216-816-11	METAL CHIP 390 5% 1/16W	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R031	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R032	1-216-816-11	METAL CHIP 390 5% 1/16W	
R033	1-216-816-11	METAL CHIP 390 5% 1/16W	
R034	1-216-864-11	METAL CHIP 0 5% 1/16W	
R035	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R037	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R038	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R039	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R040	1-216-864-11	METAL CHIP 0 5% 1/16W	
R043	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR515E/TR516E/TR713E/TRV36E/TRV46E)

Ref. No.	Part No.	Description			Remark
R045	1-216-845-11	METAL CHIP	100K	5%	1/16W
R046	1-216-821-11	METAL CHIP	1K	5%	1/16W
R047	1-216-864-11	METAL CHIP	0	5%	1/16W
R048	1-216-864-11	METAL CHIP	0	5%	1/16W
R049	1-216-833-11	METAL CHIP	10K	5%	1/16W
R050	1-216-837-11	METAL CHIP	22K	5%	1/16W
R051	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R052	1-216-833-11	METAL CHIP	10K	5%	1/16W
R055	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R056	1-216-855-11	METAL CHIP	680K	5%	1/16W
R057	1-216-819-11	METAL CHIP	680	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R057	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R058	1-216-853-11	METAL CHIP	470K	5%	1/16W
R059	1-216-821-11	METAL CHIP	1K	5%	1/16W
R060	1-216-837-11	METAL CHIP	22K	5%	1/16W
R061	1-216-833-11	METAL CHIP	10K	5%	1/16W
R062	1-216-818-11	METAL CHIP	560	5%	1/16W
R063	1-216-817-11	METAL CHIP	470	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R063	1-216-818-11	METAL CHIP	560	5%	1/16W (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R064	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R064	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R065	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R066	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R067	1-216-817-11	METAL CHIP	470	5%	1/16W
R068	1-216-817-11	METAL CHIP	470	5%	1/16W
R069	1-216-864-11	METAL CHIP	0	5%	1/16W
R072	1-216-864-11	METAL CHIP	0	5%	1/16W
R073	1-216-821-11	METAL CHIP	1K	5%	1/16W
R074	1-216-816-11	METAL CHIP	390	5%	1/16W
R075	1-216-817-11	METAL CHIP	470	5%	1/16W
R076	1-216-816-11	METAL CHIP	390	5%	1/16W
R077	1-216-814-11	METAL CHIP	270	5%	1/16W (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R078	1-216-817-11	METAL CHIP	470	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R079	1-216-817-11	METAL CHIP	470	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R080	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R081	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R082	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R083	1-216-864-11	METAL CHIP	0	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R085	1-216-833-11	METAL CHIP	10K	5%	1/16W
R087	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R088	1-216-864-11	METAL CHIP	0	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R092	1-216-809-11	METAL CHIP	100	5%	1/16W
R093	1-216-833-11	METAL CHIP	10K	5%	1/16W
R094	1-216-814-11	METAL CHIP	270	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R095	1-216-839-11	METAL CHIP	33K	5%	1/16W
R096	1-216-813-11	METAL CHIP	220	5%	1/16W
R098	1-216-817-11	METAL CHIP	470	5%	1/16W
R099	1-216-817-11	METAL CHIP	470	5%	1/16W

Ref. No.	Part No.	Description			Remark
R101	1-216-837-11	METAL CHIP	22K	5%	1/16W
R102	1-216-834-11	METAL CHIP	12K	5%	1/16W
R103	1-216-816-11	METAL CHIP	390	5%	1/16W
R104	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R105	1-216-814-11	METAL CHIP	270	5%	1/16W (TR315E/TR415E/TR425E/TRV16E/TRV26E/TRV27E/TRV27EP)
R105	1-216-819-11	METAL CHIP	680	5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R106	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R110	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R112	1-216-833-11	METAL CHIP	10K	5%	1/16W
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R167	1-216-803-11	METAL CHIP	33	5%	1/16W
R170	1-216-804-11	METAL CHIP	39	5%	1/16W
R175	1-216-836-11	METAL CHIP	18K	5%	1/16W
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W
R179	1-216-815-11	METAL CHIP	330	5%	1/16W
R183	1-218-876-11	RES,CHIP	16K	0.50%	1/16W
R184	1-218-847-11	RES,CHIP	1K	0.50%	1/16W
R185	1-216-295-91	SHORT	0		
R186	1-216-295-91	SHORT	0		
R187	1-216-295-91	SHORT	0		
R188	1-216-864-11	METAL CHIP	0	5%	1/16W
R189	1-216-295-91	SHORT	0		
R190	1-216-864-11	METAL CHIP	0	5%	1/16W
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W
R203	1-216-814-11	METAL CHIP	270	5%	1/16W
R205	1-216-835-11	METAL CHIP	15K	5%	1/16W
R206	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R208	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R210	1-216-809-11	METAL CHIP	100	5%	1/16W
R211	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R212	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R214	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R215	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R216	1-216-811-11	METAL CHIP	150	5%	1/16W
R217	1-216-864-11	METAL CHIP	0	5%	1/16W
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R219	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/ TRV27EP/TRV36E/TRV46E)
R220	1-216-815-11	METAL CHIP	330	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R222	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR516E)
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W
R224	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R225	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R226	1-216-820-11	METAL CHIP	820	5%	1/16W
R227	1-216-811-11	METAL CHIP	150	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-805-11	METAL CHIP	47	5%	1/16W
R230	1-216-812-11	METAL CHIP	180	5%	1/16W
R231	1-216-812-11	METAL CHIP	180	5%	1/16W
R232	1-216-815-11	METAL CHIP	330	5%	1/16W (TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)

Ref. No.	Part No.	Description				Remark
R233	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R234	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R235	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R236	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R237	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R238	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R239	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R240	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R241	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R242	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R243	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R244	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R245	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R246	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R247	1-216-817-11	METAL CHIP	470	5%	1/16W	
R248	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R249	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R251	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R252	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R253	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R254	1-216-864-11	METAL CHIP	0	5%	1/16W	
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R257	1-216-295-91	SHORT	0			
R258	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R259	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R260	1-216-295-91	SHORT	0			
R261	1-216-295-91	SHORT	0			
R262	1-216-295-91	SHORT	0			
R263	1-216-295-91	SHORT	0			
R264	1-216-295-91	SHORT	0			
R265	1-216-864-11	METAL CHIP	0	5%	1/16W	
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R303	1-216-817-11	METAL CHIP	470	5%	1/16W	
R304	1-216-817-11	METAL CHIP	470	5%	1/16W	
R308	1-216-864-11	METAL CHIP	0	5%	1/16W	
R311	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R313	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
R314	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R317	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R318	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R321	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R322	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R323	1-218-879-11	RES,CHIP	22K	0.50%	1/16W	
R325	1-218-903-11	RES,CHIP	220K	0.50%	1/16W	
R331	1-216-820-11	METAL CHIP	820	5%	1/16W	
R371	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R374	1-216-809-11	METAL CHIP	100	5%	1/16W	
R375	1-216-834-11	METAL CHIP	12K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R376	1-216-834-11	METAL CHIP	12K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R377	1-216-834-11	METAL CHIP	12K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R379	1-216-852-11	METAL CHIP	390K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R382	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R383	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R384	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R385	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R386	1-216-849-11	METAL CHIP	220K	5%	1/16W	(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R388	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R389	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R407	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R409	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R410	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R412	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
R414	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R425	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R426	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R427	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R429	1-216-811-11	METAL CHIP	150	5%	1/16W	
R430	1-216-813-11	METAL CHIP	220	5%	1/16W	
R431	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R432	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R434	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R440	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R441	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R442	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R443	1-216-295-91	SHORT	0			
R452	1-217-671-11	METAL CHIP	1	5%	1/10W	
R453	1-217-671-11	METAL CHIP	1	5%	1/10W	
R454	1-217-671-11	METAL CHIP	1	5%	1/10W	
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR713E/TRV46E)
R458	1-216-808-11	METAL CHIP	82	5%	1/16W	
R459	1-216-864-11	METAL CHIP	0	5%	1/16W	
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R462	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R463	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R464	1-216-851-11	METAL CHIP	330K	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R465	1-216-845-11	METAL CHIP	100K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W
R469	1-216-841-11	METAL CHIP	47K	5%	1/16W
R470	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R472	1-216-837-11	METAL CHIP	22K	5%	1/16W
R473	1-216-841-11	METAL CHIP	47K	5%	1/16W
R474	1-216-817-11	METAL CHIP	470	5%	1/16W
R475	1-216-838-11	METAL CHIP	27K	5%	1/16W
R476	1-216-817-11	METAL CHIP	470	5%	1/16W
R477	1-216-864-11	METAL CHIP	0	5%	1/16W
R479	1-216-833-11	METAL CHIP	10K	5%	1/16W
R480	1-216-833-11	METAL CHIP	10K	5%	1/16W
R481	1-216-864-11	METAL CHIP	0	5%	1/16W
R482	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R483	1-216-836-11	METAL CHIP	18K	5%	1/16W
R484	1-217-671-11	METAL CHIP	1	5%	1/10W
R485	1-217-671-11	METAL CHIP	1	5%	1/10W
R486	1-216-845-11	METAL CHIP	100K	5%	1/16W
R487	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R488	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R490	1-216-023-00	METAL CHIP	82	5%	1/10W
R502	1-216-798-11	RES,CHIP	12	5%	1/16W
R503	1-216-798-11	RES,CHIP	12	5%	1/16W
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W
R506	1-216-857-11	METAL CHIP	1M	5%	1/16W
R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R511	1-216-809-11	METAL CHIP	100	5%	1/16W
R512	1-216-853-11	METAL CHIP	470K	5%	1/16W
R513	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R522	1-216-864-11	METAL CHIP	0	5%	1/16W
R525	1-216-864-11	METAL CHIP	0	5%	1/16W
R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R529	1-216-864-11	METAL CHIP	0	5%	1/16W
R533	1-216-864-11	METAL CHIP	0	5%	1/16W
R534	1-216-864-11	METAL CHIP	0	5%	1/16W
R535	1-216-864-11	METAL CHIP	0	5%	1/16W
R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R537	1-216-296-91	SHORT	0		
R551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R554	1-216-843-11	METAL CHIP	68K	5%	1/16W
R555	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R556	1-216-001-00	METAL CHIP	10	5%	1/10W
R557	1-216-843-11	METAL CHIP	68K	5%	1/16W
R558	1-216-295-91	SHORT	0		
R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R561	1-216-853-11	METAL CHIP	470K	5%	1/16W
R562	1-216-849-11	METAL CHIP	220K	5%	1/16W
R563	1-216-853-11	METAL CHIP	470K	5%	1/16W
R564	1-216-853-11	METAL CHIP	470K	5%	1/16W
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-216-835-11	METAL CHIP	15K	5%	1/16W
R567	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R570	1-216-841-11	METAL CHIP	47K	5%	1/16W
R571	1-216-837-11	METAL CHIP	22K	5%	1/16W
R572	1-216-845-11	METAL CHIP	100K	5%	1/16W
R573	1-216-815-11	METAL CHIP	330	5%	1/16W
R574	1-216-821-11	METAL CHIP	1K	5%	1/16W
R575	1-216-821-11	METAL CHIP	1K	5%	1/16W
R576	1-216-821-11	METAL CHIP	1K	5%	1/16W
R577	1-216-833-11	METAL CHIP	10K	5%	1/16W
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R582	1-216-864-11	METAL CHIP	0	5%	1/16W
R583	1-216-295-91	SHORT	0		
R584	1-216-295-91	SHORT	0		
R603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R604	1-216-813-11	METAL CHIP	220	5%	1/16W
R605	1-216-841-11	METAL CHIP	47K	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R606	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(TR713E/TRV46E)
R608	1-216-845-11	METAL CHIP	100K	5%	1/16W
R610	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R611	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
					(TR713E/TRV46E)
R612	1-216-853-11	METAL CHIP	470K	5%	1/16W
R613	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E)
R614	1-216-821-11	METAL CHIP	1K	5%	1/16W
					(TR713E/TRV46E)
R618	1-216-853-11	METAL CHIP	470K	5%	1/16W
R619	1-216-853-11	METAL CHIP	470K	5%	1/16W
R620	1-216-853-11	METAL CHIP	470K	5%	1/16W
R621	1-216-853-11	METAL CHIP	470K	5%	1/16W
R622	1-216-853-11	METAL CHIP	470K	5%	1/16W
R624	1-216-853-11	METAL CHIP	470K	5%	1/16W
R625	1-216-845-11	METAL CHIP	100K	5%	1/16W
R627	1-216-853-11	METAL CHIP	470K	5%	1/16W
R628	1-216-841-11	METAL CHIP	47K	5%	1/16W
R629	1-216-833-11	METAL CHIP	10K	5%	1/16W
R630	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R631	1-216-845-11	METAL CHIP	100K	5%	1/16W
R632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R633	1-216-853-11	METAL CHIP	470K	5%	1/16W
R634	1-216-853-11	METAL CHIP	470K	5%	1/16W
R635	1-216-857-11	METAL CHIP	1M	5%	1/16W
R636	1-216-857-11	METAL CHIP	1M	5%	1/16W
R637	1-216-845-11	METAL CHIP	100K	5%	1/16W
R638	1-216-845-11	METAL CHIP	100K	5%	1/16W
R639	1-216-845-11	METAL CHIP	100K	5%	1/16W
R640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R641	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W
R643	1-216-857-11	METAL CHIP	1M	5%	1/16W
R644	1-216-841-11	METAL CHIP	47K	5%	1/16W
R645	1-216-845-11	METAL CHIP	100K	5%	1/16W
R646	1-216-853-11	METAL CHIP	470K	5%	1/16W
R647	1-216-853-11	METAL CHIP	470K	5%	1/16W
R648	1-216-853-11	METAL CHIP	470K	5%	1/16W
R649	1-216-857-11	METAL CHIP	1M	5%	1/16W
R650	1-219-570-11	RES,CHIP	10M	5%	1/16W
R651	1-216-845-11	METAL CHIP	100K	5%	1/16W
R652	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R653	1-216-853-11	METAL CHIP	470K	5%	1/16W
R654	1-216-817-11	METAL CHIP	470	5%	1/16W
R655	1-216-853-11	METAL CHIP	470K	5%	1/16W
R666	1-216-821-11	METAL CHIP	1K	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W
R668	1-216-821-11	METAL CHIP	1K	5%	1/16W
R669	1-216-821-11	METAL CHIP	1K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-821-11	METAL CHIP	1K	5%	1/16W
R673	1-216-821-11	METAL CHIP	1K	5%	1/16W
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W
R676	1-216-821-11	METAL CHIP	1K	5%	1/16W
R677	1-216-821-11	METAL CHIP	1K	5%	1/16W
R678	1-216-821-11	METAL CHIP	1K	5%	1/16W
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W
R680	1-216-845-11	METAL CHIP	100K	5%	1/16W
R681	1-216-821-11	METAL CHIP	1K	5%	1/16W
R682	1-216-821-11	METAL CHIP	1K	5%	1/16W
R683	1-216-821-11	METAL CHIP	1K	5%	1/16W
R684	1-216-821-11	METAL CHIP	1K	5%	1/16W
R685	1-216-821-11	METAL CHIP	1K	5%	1/16W
R686	1-216-821-11	METAL CHIP	1K	5%	1/16W
R687	1-216-821-11	METAL CHIP	1K	5%	1/16W
R689	1-216-864-11	METAL CHIP	0	5%	1/16W
R691	1-216-845-11	METAL CHIP	100K	5%	1/16W
R692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R693	1-216-821-11	METAL CHIP	1K	5%	1/16W
R695	1-216-827-11	METAL CHIP	3.3K	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R697	1-216-854-11	METAL CHIP	560K	5%	1/16W
R726	1-216-864-11	METAL CHIP	0	5%	1/16W
R752	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR713E/TRV46E)
R753	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR713E/TRV46E)
R755	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR713E/TRV46E)
R756	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR713E/TRV46E)
R757	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR713E/TRV46E)
R758	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR713E/TRV46E)
R759	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR713E/TRV46E)
R760	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR713E/TRV46E)
R761	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR713E/TRV46E)
R763	1-218-879-11	RES,CHIP	22K	0.50%	1/16W (TR713E/TRV46E)
R764	1-216-815-11	METAL CHIP	330	5%	1/16W (TR713E/TRV46E)
R765	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR713E/TRV46E)
R766	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR713E/TRV46E)
R767	1-216-817-11	METAL CHIP	470	5%	1/16W (TR713E/TRV46E)
R768	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR713E/TRV46E)

Ref. No.	Part No.	Description			Remark
R770	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR713E/TRV46E)
R771	1-216-818-11	METAL CHIP	560	5%	1/16W (TR713E/TRV46E)
R772	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (TR713E/TRV46E)
R773	1-216-817-11	METAL CHIP	470	5%	1/16W (TR713E/TRV46E)
R774	1-216-840-11	METAL CHIP	39K	5%	1/16W (TR713E/TRV46E)
R775	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR516E/TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W (TR516E)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR516E/TR713E)
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR516E)
R917	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR713E/TRV36E)
R917	1-216-841-11	METAL CHIP	47K	5%	1/16W (TRV16E/TRV26E/TRV27E/TRV27EP/TRV46E)
R918	1-216-845-11	METAL CHIP	100K	5%	1/16W
R919	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR713E/TRV16E/TRV26E/TRV27E/TRV27EP)
R919	1-216-842-11	METAL CHIP	56K	5%	1/16W (TRV36E/TRV46E)
R919	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR315E/TR415E/TR425E/TR515E/TR516E)
R920	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR516E)
R920	1-216-837-11	RES,CHIP	22K	5%	1/16W (TR515E)
R920	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR315E/TR415E/TR425E)
R920	1-216-843-11	METAL CHIP	68K	5%	1/16W (TRV36E/TRV46E)
R920	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR713E/TRV16E/TRV26E/TRV27E/TRV27EP)
R921	1-216-800-11	RES,CHIP	18	5%	1/16W (TR515E/TR713E/TRV36E/TRV46E)
R922	1-217-671-11	METAL CHIP	1	5%	1/10W
R923	1-217-671-11	METAL CHIP	1	5%	1/10W
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W
R925	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-821-11	METAL CHIP	1K	5%	1/16W
R929	1-216-864-11	METAL CHIP	0	5%	1/16W
		< TRANSFORMER >			
T902	1-431-915-11	TRANSFORMER ASSY, FLYBACK (M)			(TR515E/TR713E/TRV36E/TRV46E:A1,A2,E,U,E1,H,A,E2)
		< VIBRATOR >			
X401	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)			
X501	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)			
X601	1-760-458-21	VIBRATOR, CERAMIC (20MHz)			
X602	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			

Ref. No.	Part No.	Description			Remark
	A-7066-774-A	VF-99 BOARD, COMPLETE			
		********************			
		(TR315E/TR415E/TR425E/TR515E/TR713E/TRV16E/TRV26E/TRV27E/ TRV27EP/TRV36E/TRV46E)			
		(Ref. No. 10,000 Series)			
		< CAPACITOR >			
C901	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C903	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-104-563-11	FILM CHIP	0.1uF	5%	16V
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C910	1-163-017-91	CERAMIC CHIP	0.0047uF	5%	50V (TYPE 3)
⚠C910	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V (TYPE 2)
⚠C911	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C913	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C914	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
		< CONNECTOR >			
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P			
* CN902	1-580-057-11	PIN, CONNECTOR 4P			
		< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR			
D903	8-719-404-50	DIODE MA111-TX			
D905	8-719-073-03	DIODE MA8082-TX			
		< IC >			
IC901	8-759-196-14	IC BA7149F-E2			
		< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH			
L902	1-410-387-11	INDUCTOR CHIP 33uH			
⚠L903	1-411-759-11	COIL, FERRITE (HLC)(K)(TYPE 2)			
⚠L903	1-411-697-11	COIL, FERRITE (HLC)(TYPE 3)			
		< TRANSISTOR >			
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK			
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L			
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			
		< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-817-11	METAL CHIP	470	5%	1/16W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R906	1-216-813-11	METAL CHIP	220	5%	1/16W (TYPE 3)
R906	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TYPE 2)
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	RES,CHIP	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R916	1-218-881-11	RES,CHIP	27K	0.50%	1/16W
R917	1-218-893-11	RES,CHIP	82K	0.50%	1/16W
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-795-11	RES,CHIP	6.8	5%	1/16W (TYPE 3)
R921	1-216-800-11	RES,CHIP	18	5%	1/16W (TYPE 2)
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R925	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W
R930	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R931	1-217-671-11	METAL CHIP	1	5%	1/10W
R932	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
		< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470			
RV904	1-238-862-11	RES, ADJ, CERMET 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK (TYPE 3)			
⚠T902	1-431-915-11	TRANSFORMER ASSY, FLYBACK (M) (TYPE 2)			
		< FLEXIBLE BOARD >			
⚠W901	1-540-019-42	SOCKET ASSY, CRT			

Ref. No.	Part No.	Description			Remark
	A-7073-437-A	VF-119 BOARD, COMPLETE (TR516E)			
		**********************			
		(Ref. No. 10,000 Series)			
		< CAPACITOR >			
C5401	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5403	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C5404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5407	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5408	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5409	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5411	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5413	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C5414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5415	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C5416	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C5417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5418	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5419	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C5420	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C5421	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C5422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5424	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5427	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5429	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
		< CONNECTOR >			
CN5401	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN5402	1-691-380-21	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D5401	8-713-102-80	DIODE 1T369-01-T8A			
D5402	8-719-062-16	DIODE 01ZA8.2(TPL3)			
		< FERRITE BEAD >			
FB5405	1-500-238-22	FERRITE 0UH			
		< IC >			
IC5401	8-759-546-65	IC CXA8115AR-T4			
IC5402	8-759-364-05	IC M62376GP-65AD			
IC5404	8-752-392-33	IC CXD2458R-T4			
		< COIL >			
L5401	1-414-754-11	INDUCTOR	10uH		
L5402	1-414-754-11	INDUCTOR	10uH		
L5403	1-412-959-11	INDUCTOR	47uH		
L5404	1-412-949-21	INDUCTOR	6.8uH		
		< RESISTOR >			
R5401	1-216-864-11	METAL CHIP	0	5%	1/16W
R5403	1-216-864-11	METAL CHIP	0	5%	1/16W
R5405	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5408	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5409	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5415	1-216-864-11	METAL CHIP	0	5%	1/16W
R5416	1-216-864-11	METAL CHIP	0	5%	1/16W
R5417	1-216-864-11	METAL CHIP	0	5%	1/16W
R5420	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5422	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5423	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5424	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5425	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5426	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5427	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5428	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5429	1-216-864-11	METAL CHIP	0	5%	1/16W
R5431	1-216-809-11	METAL CHIP	100	5%	1/16W
R5432	1-216-809-11	METAL CHIP	100	5%	1/16W
R5435	1-216-809-11	METAL CHIP	100	5%	1/16W
R5437	1-216-864-11	METAL CHIP	0	5%	1/16W
R5439	1-216-864-11	METAL CHIP	0	5%	1/16W
R5440	1-218-905-11	RES,CHIP	270K	0.50%	1/16W
R5441	1-218-875-11	RES,CHIP	15K	0.50%	1/16W
R5444	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5446	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5447	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5448	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5449	1-216-864-11	METAL CHIP	0	5%	1/16W
R5452	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5458	1-216-864-11	METAL CHIP	0	5%	1/16W
R5460	1-216-864-11	METAL CHIP	0	5%	1/16W
R5473	1-216-864-11	METAL CHIP	0	5%	1/16W
R5476	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-438-A VF-120 BOARD, COMPLETE (TR516E)

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(Ref. No. 10,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C5302	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C5303	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5305	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5306	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C5307	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5308	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C5311	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C5312	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5313	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C5314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN5301	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P			
CN5302	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P			
		< DIODE >			
D5301	8-719-043-70	DIODE MA6S121-(TX)			
D5302	8-719-056-49	DIODE 1SS370(TE85L)			
		< IC >			
IC5301	8-759-097-75	IC MB3789PFV-G-BND-ER			
		< COIL >			
L5301	1-412-031-11	INDUCTOR CHIP	47uH		
		< TRANSISTOR >			
Q5301	8-729-028-81	TRANSISTOR RN2305-TE85L			
Q5304	8-729-403-35	TRANSISTOR UN5113-TX			
Q5305	8-729-402-42	TRANSISTOR UN5213-TX			
		< RESISTOR >			
R5301	1-216-809-11	METAL CHIP	100	5%	1/16W
R5304	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R5305	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R5306	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5308	1-216-847-11	METAL CHIP	150K	5%	1/16W
R5309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5310	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5311	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5312	1-216-843-11	METAL CHIP	68K	5%	1/16W

Ref. No.	Part No.	Description	Remark
R5313	1-216-842-11	METAL CHIP 56K 5%	1/16W
R5314	1-216-850-11	METAL CHIP 270K 5%	1/16W
R5315	1-216-833-11	METAL CHIP 10K 5%	1/16W
R5316	1-216-851-11	METAL CHIP 330K 5%	1/16W
R5317	1-216-848-11	METAL CHIP 180K 5%	1/16W
R5318	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R5321	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5322	1-216-853-11	METAL CHIP 470K 5%	1/16W
R5324	1-216-864-11	METAL CHIP 0 5%	1/16W

A-7073-787-A VL-21 BOARD, COMPLETE
****
(TR515E/TR516E/TR713E)
(Ref. No. 2,000 Series)

A-7073-808-A VL-22 BOARD, COMPLETE (TRV36E/TRV46E)
****
(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C151	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V (TR515E/TR516E/TR713E/TRV36E/TRV46E)
C153	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V (TR515E/TR516E/TR713E/TRV36E/TRV46E)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN151	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P	(TR515E/TR516E/TR713E/TRV36E/TRV46E)

< COIL >

Ref. No.	Part No.	Description	Remark
L151	1-416-344-11	INDUCTOR 10uH	(TR515E/TR516E/TR713E/TRV36E/TRV46E)

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q151	8-729-043-94	TRANSISTOR CPH3106-PM-TL	(TR515E/TR516E/TR713E/TRV36E/TRV46E)
Q152	8-729-028-26	TRANSISTOR 2SK1829(TE85L)	(TR515E/TR516E/TR713E/TRV36E/TRV46E)

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R151	1-216-864-11	METAL CHIP 0 5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R152	1-216-813-11	METAL CHIP 220 5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R153	1-216-821-11	METAL CHIP 1K 5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)
R154	1-216-845-11	METAL CHIP 100K 5%	1/16W (TR515E/TR516E/TR713E/TRV36E/TRV46E)

MISCELLANEOUS
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Ref. No.	Part No.	Description	Remark
67	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
73	1-418-215-21	SWITCH BLOCK, CONTROL (FK-8500)	(TR415E/TR425E/TR515E/TRV26E/TRV27E/TRV27EP/TRV36E)
73	1-418-215-61	SWITCH BLOCK, CONTROL (FK-8500)	(TR713E/TRV46E:AEP,UK,EE,NE,RU)
73	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500)	(TR315E/TR516E/TRV16E)
73	1-475-617-21	SWITCH BLOCK, CONTROL (FK-8500)	(TRV46E:E,HK,AUS,CN,JE)
151	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)	
157	1-790-334-11	CABLE, FLEXIBLE FLAT (FFC-257F)	
209	1-668-957-11	FP-621 FLEXIBLE BOARD	
210	1-672-454-11	FP-58 FLEXIBLE BOARD (for Video light models)	
211	1-672-453-11	FP-56 FLEXIBLE BOARD	
212	1-668-956-11	FP-620 FLEXIBLE BOARD (TR713E & TRV series)	
254	1-672-455-11	FP-57 FLEXIBLE BOARD	(for Color view finder models)
308	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)	(for B/W view finder models)
358	1-668-963-21	FP-642 FLEXIBLE BOARD (for TRV series)	
359	1-959-271-11	HARNESS (PD-108) (for TRV series)	
401	8-848-722-01	DEVICE, LENS LSV-600A (SOC)	
409	1-758-133-21	FILTER BLOCK, OPTICAL	
412	1-668-959-11	FP-623 FLEXIBLE BOARD	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
IC401	A-7030-961-A	CCD BLOCK ASSY (207 SERVICE)	(Except TR713E/TRV46E)
IC401	A-7030-962-A	CCD BLOCK ASSY (243 SERVICE)	(TR713E/TRV46E)
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
LCD901	1-803-355-21	MODULE, CRYSTAL INDICATION	
LCD902	8-753-023-37	LCX024AK-4/5 COMPLE	(for Color view finder models)
LCD903	A-7093-473-A	INDICATION LCD BLOCK ASSY	
M901	A-7048-875-A	DRUM ASSY (DGH-0E2A-R)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE	
⚠ND801	1-517-752-11	TUBE, FLUORESCENT, COLD CATHODE	(for TRV series)
⚠ND5351	1-517-325-21	LAMP, FLUORESCENT (0.55 INCH)	(for Color view finder models)
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	(Hi8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	
S003	1-572-688-11	SWITCH, PUSH (1 KEY) (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	(TR713E/TRV46E)
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	(TR713E/TRV46E)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
SP901	1-504-753-41	SPEAKER (2.8 CM) (for TRV series)	
⚠VL901	1-517-760-11	LIGHT, VIDEO (for Video light models)	
⚠V901	1-452-673-61	CRT ASSY (M01KXX90WB)	(for B/W view finder models)

ACCESSORIES

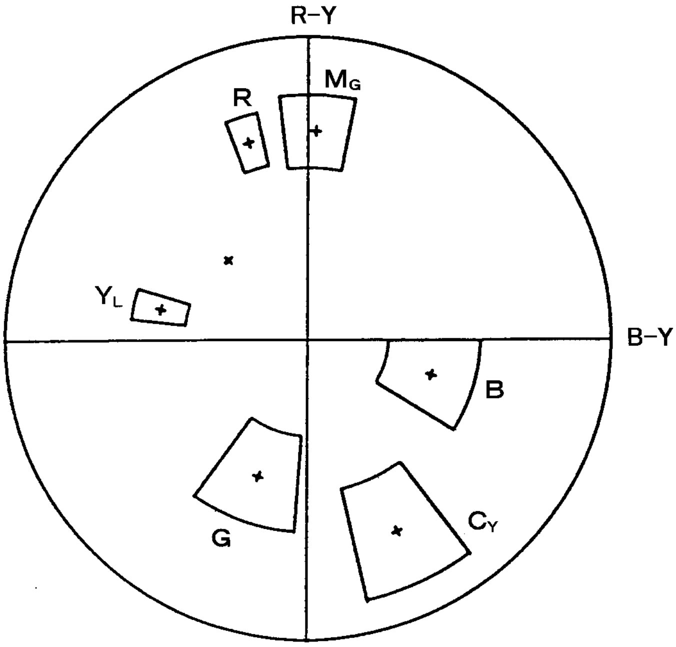
****

Ref. No.	Part No.	Description	Remark
	1-467-574-21	REMOTE COMMANDER (RMT-708)	(TR425E/TR515E/TR516E/TR713E/TRV27E/ TRV27EP/TRV36E/TRV46E)
⚠	1-475-599-11	ADAPTOR, AC (AC-L10)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P	(E,HK models only : TR315E/TR516E/TRV16E/TRV46E & TRV27EP)
⚠	1-573-291-11	ADAPTOR, CONVERSION 21P	(AEP,UK,EE,NE,RU models only : TR415E/TR425E/TR515E/TR713E/ TRV26E/TRV27E/TRV36E/TRV46E)
⚠	1-573-865-11	ADAPTOR, CONVERSION 2P	(JE model only : TR315E/TRV46E)
	1-696-862-21	CORD, CONNECTION (A/V CONNECTING CABLE (Monaural) 1.5M)	
⚠	1-575-131-11	CORD, POWER	(E model only : TR315E/TR516E/TRV16E/TRV27EP/TRV46E)
⚠	1-690-827-11	CORD SET, POWER	(AEP,EE,NE,RU models only : TR415E/TR425E/TR515E/TR713E/ TRV26E/TRV27E/TRV36E/TRV46E)
⚠	1-696-819-11	CORD, POWER	(AUS model only : TR315E/TR516E/TRV16E/TRV46E)
⚠	1-775-843-21	CORD, POWER (with Filter)	(UK models only : TR415E/TR425E/TR515E/TR713E/ TRV26E/TRV27E/TRV36E/TRV46E)
⚠	1-782-476-11	CORD, POWER	(CN model only : TR315E/TR516E/TRV16E/TRV46E)
⚠	1-783-374-11	CORD, POWER	(HK model only : TR315E/TR516E/TRV16E/TRV46E)
	1-790-073-11	CORD, POWER 2P	(JE model only : TR315E/TRV46E)
	3-865-334-11	MANUAL, INSTRUCTION (English,Russian)	(UK,EE,NE,RU models only : TR415E/TR425E/TR515E/TR713E)
	3-865-334-21	MANUAL, INSTRUCTION (Spanish,Portuguese)	(AEP model only : TR415E/TR425E/TR515E/TR713E)
	3-865-334-31	MANUAL, INSTRUCTION (German,Italian)	(AEP model only : TR415E/TR425E/TR515E/TR713E)
	3-865-334-41	MANUAL, INSTRUCTION (French,Dutch)	(AEP model only : TR415E/TR425E/TR515E/TR713E)
	3-865-334-51	MANUAL, INSTRUCTION (Polish,Swedish)	(E model only : TR415E/TR425E/TR515E/TR713E)
	3-865-335-11	MANUAL, INSTRUCTION (English,Russian)	(TR315E/TR516E)
	3-865-335-21	MANUAL, INSTRUCTION (French,German)	(TR315E : E,HK,CN,JE/TR516E)
	3-865-335-31	MANUAL, INSTRUCTION (Arabic,Persia)	(E,CN models only : TR315E/TR516E)
	3-865-335-41	MANUAL, INSTRUCTION (Chinese)	(HK model only : TR315E/TR516E)
	3-865-335-51	MANUAL, INSTRUCTION (Chinese)	(TR315E : E,CN,JE/TR516E)
	3-865-336-11	MANUAL, INSTRUCTION (English,Russian)	(UK,EE,NE,RU models only : TRV26E/TRV27E/TRV36E/TRV46E)
	3-865-336-21	MANUAL, INSTRUCTION (Spanish,Portuguese)	(AEP model only : TRV26E/TRV27E/TRV36E/TRV46E)
	3-865-336-31	MANUAL, INSTRUCTION (German,Italian)	(AEP model only : TRV26E/TRV27E/TRV36E/TRV46E)
	3-865-336-41	MANUAL, INSTRUCTION (French,Dutch)	(AEP model only : TRV26E/TRV27E/TRV36E/TRV46E)
	3-865-336-51	MANUAL, INSTRUCTION (Polish,Swedish)	(E model only : TRV26E/TRV27E/TRV36E/TRV46E)
	3-865-337-11	MANUAL, INSTRUCTION (English,Russian)	(TRV16E/TRV27EP/TRV46E:E,HK,AUS,CN,JE)
	3-865-337-21	MANUAL, INSTRUCTION (French,German)	(TRV16E:E,HK,CN/TRV27EP/TRV46E:E,HK,JE)
	3-865-337-31	MANUAL, INSTRUCTION (Arabic,Persia)	(TRV16E:E,CN/TRV27EP/TRV46E:E)
	3-865-337-41	MANUAL, INSTRUCTION (Chinese)	(HK model only : TRV16E/TRV46E)
	3-865-337-51	MANUAL, INSTRUCTION (Chinese)	(TRV16E:E,CN/TRV27EP/TRV46E:E,CN,JE)
	3-987-015-01	BELT (S), SHOULDER	
	3-988-960-01	BAG (8500), CARRYING (TRV27EP)	
	A-7094-141-A	NP-F330 BATTERY PACK	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

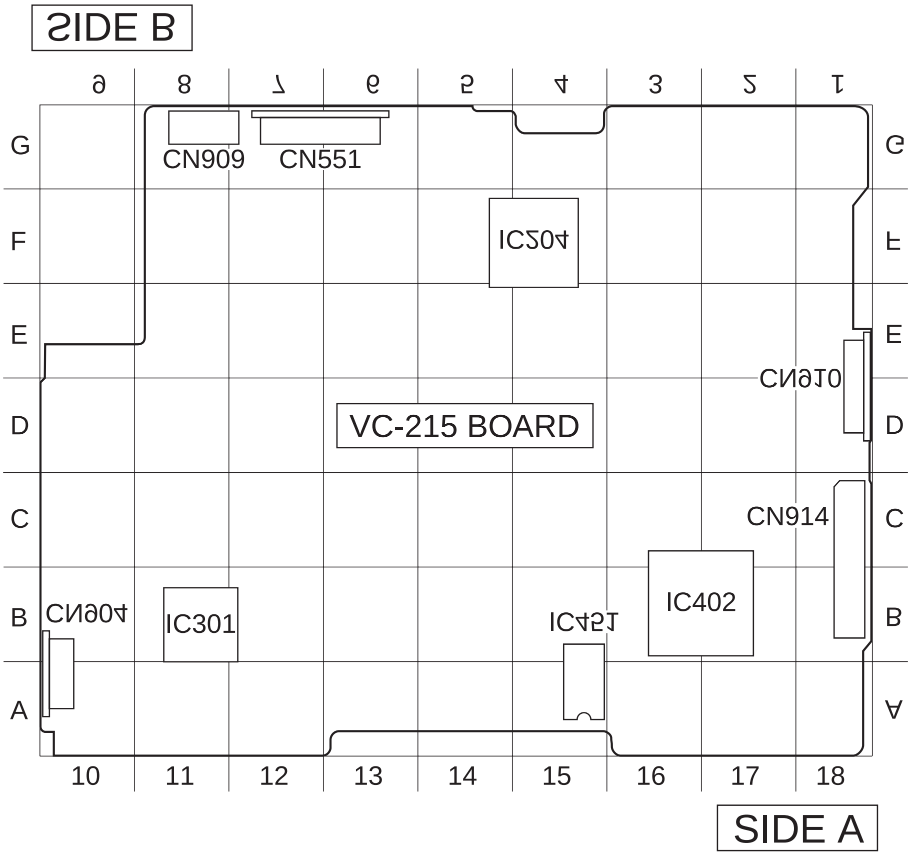


R–Y
MG
R
YL
B–Y
B
G
CY

CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to boards of a set.



SIDE B
VC-215 BOARD
CN909
CN551
IC204
CN910
CN914
IC402
IC452
IC301
CN904
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
SIDE A

CCD-TR315E/TR415E/TR425E/TR515E/TR516E/TR713E
CCD-TRV16E/TRV26E/TRV27E/TRV27EP/TRV36E/TRV46E

9-974-129-11

Sony Corporation
Personal A&V Products Company

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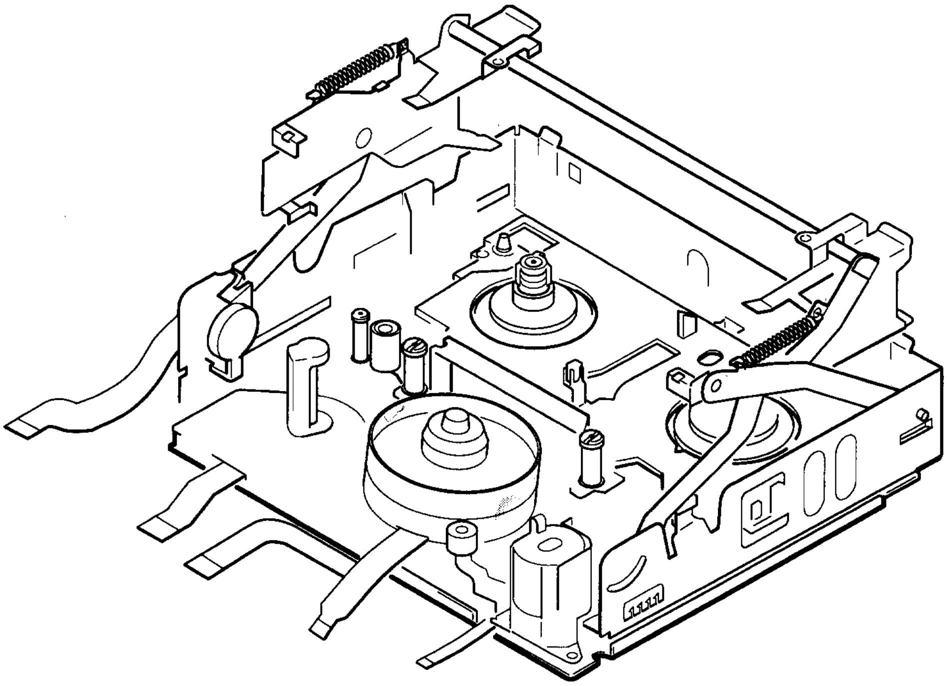
(Shinagawa)

8mm Video MECHANICAL ADJUSTMENT MANUAL Ⅶ

B MECHANISM

Video8

Use this mechanical adjustment manual Ⅶ together with the service manual of the respective models.



8 MECHANISM DECK

SONY®

MICROFILM

MC-Service

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For the mode selector operation, schematic diagram and parts list, refer to the Supplement-1 Manual.

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

For the disassembly procedures of the cabinet and printed wiring boards, please refer to the "DISASSEMBLY" section of the service manual of the respective models.

To re-assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.

The mechanisms are adjusted while set in the USE mode of operation. (Refer to the "Mode Selector Operation Procedure of the Supplement-1 Manual for how to enter the USE mode.)

1-1. Cassette Compartment Block Assy

1. Disassembly Procedure (Refer to Fig. 1.)

1) Set the mechanism to USE mode.
2) Confirm that the Cassette Compartment Block Assy is opened. If it is not opened, open it referring to Fig. a.
3) Remove the claws Ⓐ and Ⓑ of the Damper Assy ① from the chassis.
4) Remove the washer ② from the shaft of the Cassette Compartment near the Drum, next to the loading motor. Remove the shaft of the arm from the slot.
5) Remove the shaft of the arm from the slot Ⓒ of the Cassette Compartment near the Drum, next to the capstan motor. (Refer to Fig. b)
6) Lift up the Cassette Compartment at the Drum side in the direction of the arrow Ⓓ, and remove the arm shaft of the Cassette Compartment from the LS Chassis ④ near the Reel Tables. Remove the Cassette Compartment Assy ③ in the direction of the arrow Ⓔ.

2. Precautions During Re-Assembling

1) After attaching the Tension Spring, confirm that the straight portion at the end of the curved hook of the spring is positioned inside the mechanism. (Refer to Fig. c)
2) Confirm that the claw in the bottom of the shaft near the Reel Table of the Cassette Compartment is hooked to the LS Chassis.
3) Confirm that the claw of the Damper Assy is hooked to the LS Chassis. (Refer to Fig. b)

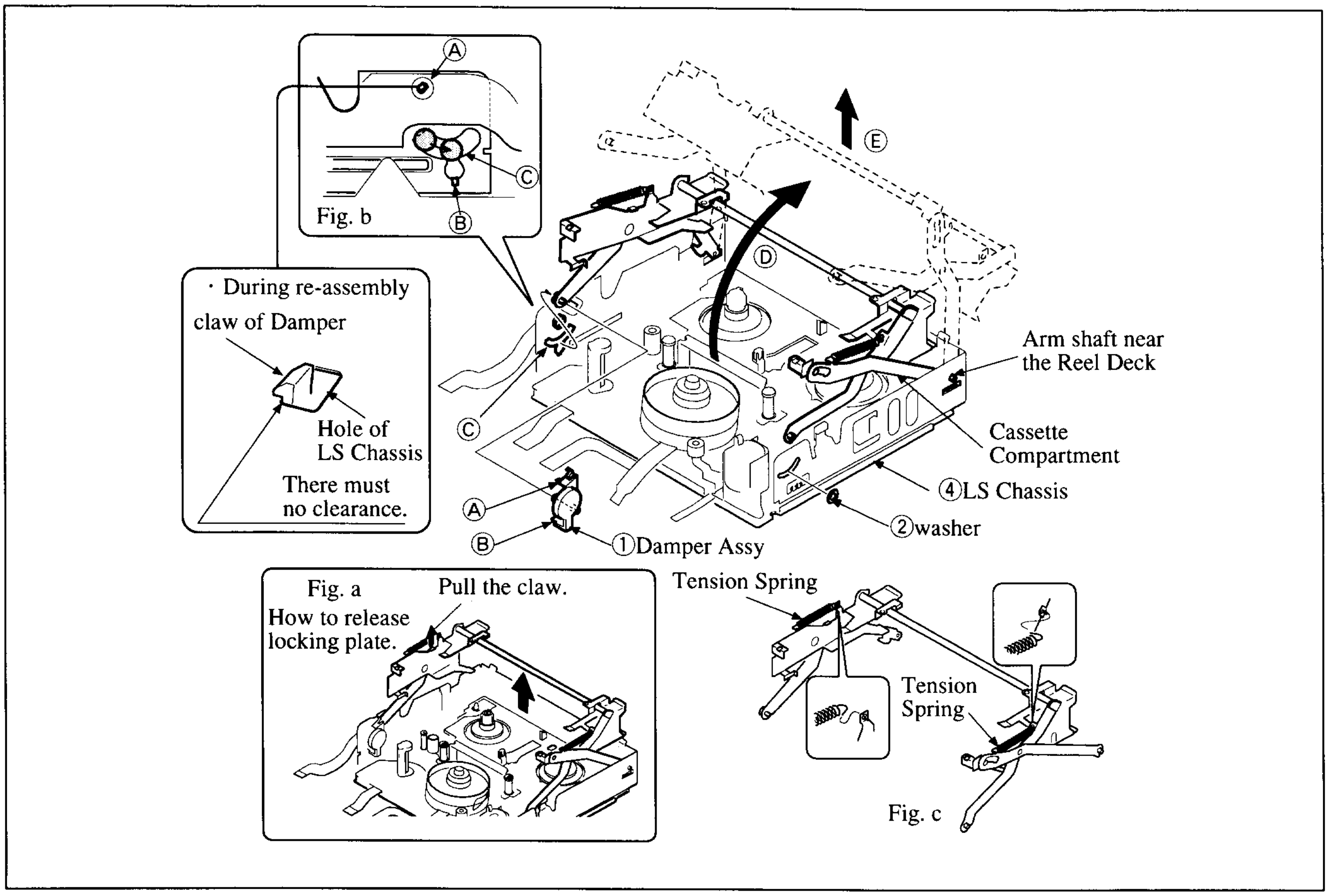

Ⓐ
Ⓒ
Fig. b
Ⓑ
Ⓔ
Ⓓ
· During re-assembly
claw of Damper
Hole of
LS Chassis
There must
no clearance.
Arm shaft near
the Reel Deck
Cassette
Compartment
Ⓒ
④LS Chassis
②washer
Ⓐ
Ⓑ
①Damper Assy
Fig. a
Pull the claw.
How to release
locking plate.
Tension Spring
Tension
Spring
Fig. c

Fig. 1

1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed

1. How to load a cassette tape (Refer to Fig. 2):

1) While referring to section "DISASSEMBLY" of the respective service manual, turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
2) Connect the adjustment remote commander (Ref. No. J-10) and establish the TEST mode.

> Example of establishing the TEST mode: model CCD-TR420E/TR440E.
> Select page: 6, address: 00, set data :01 and press the PAUSE button to release protection.
> Select page: 7, address: 01, set data: 01 and press the PAUSE button.
> After tape loading or other desired operations of mechanism are completed, be sure to perform the following:
> Select page: F, address: 01, set data :00 and press the PAUSE button.
> Select page: 6, address: 00, set data: 00 and press the PAUSE button.

3) Press the push-switch ① knob in the direction of the arrow which sets the machine into loading mode.

☆ PB, FF/REW and CUE/REV operations are possible.

2. How to establish RECORD mode:

1) Press pin of the push-switch ② (ON state) and keep the ON state by fixing with adhesive tape ③.
2) Turn the main power switch ON (select VTR or CAMERA position of in case of camera).
3) Set the RECORD switch to ON.
   (When the TEST mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

1) Press the EJECT switch to ON.

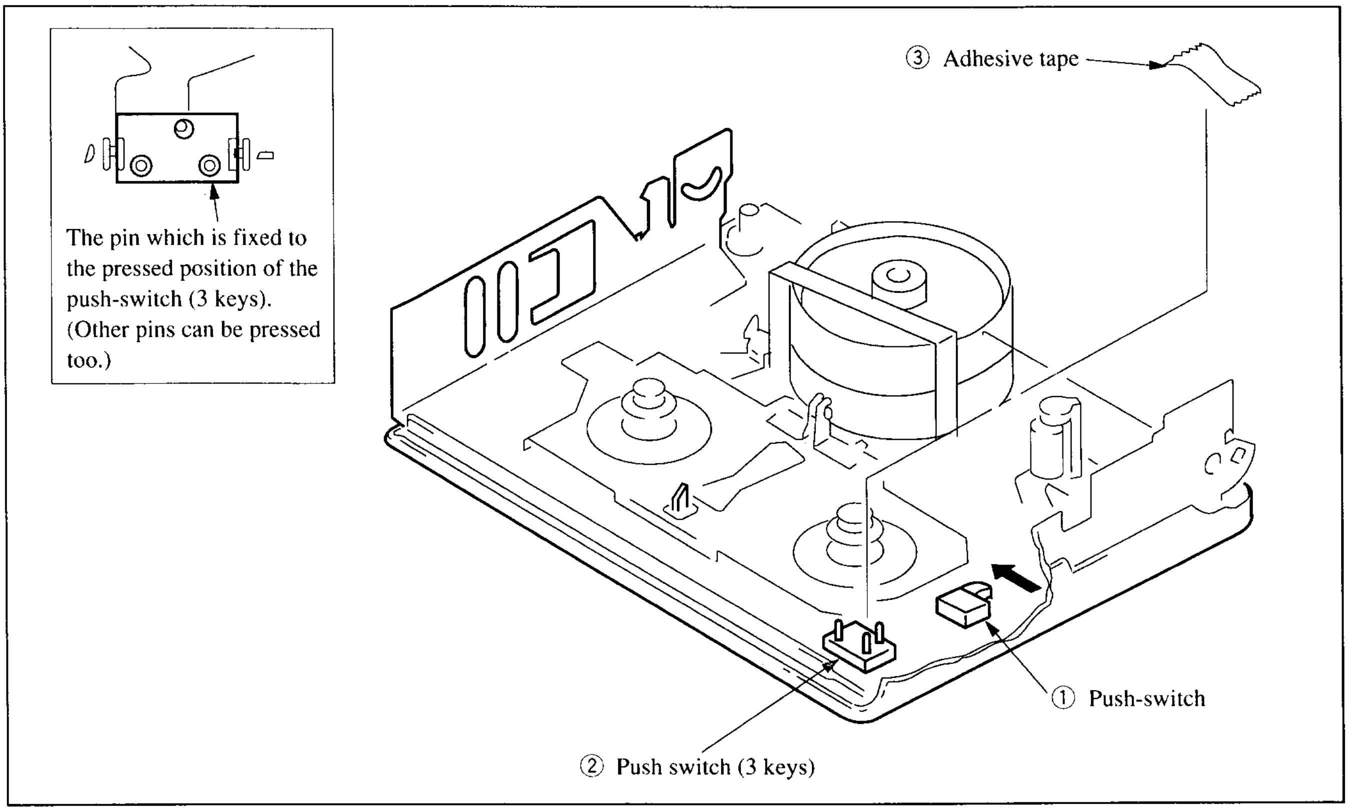

The pin which is fixed to the pressed position of the push-switch (3 keys). (Other pins can be pressed too.)

Fig. 2

2. PERIODIC CHECK AND MAINTENANCE ITEMS

- Perform the following periodic check and maintenance to ensure that the machine functions continue to operate in peak condition, and to protect the tape and mechanism deck. After completing repair work, perform the following maintenance items regardless of how long the user's machine has been used.

2-1. Rotary Drum Assy Cleaning

Press the cleaning piece (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly on the Rotary Drum Assy. Gently turn the Rotary Drum Assy slowly by hand counter-clockwise to clean the rotary drum.

Caution: Never attempt to turn the head drum motor by turning the main power ON. Also, never turn the drum clockwise by hand. In addition, never move the cleaning piece vertically with respect to the head tips, since this will damage them. Never clean the head drum in any way other than as described above.

2-2. Tape Path Cleaning (Refer to Fig. 3.)

1) Set the mechanism to USE mode. Clean the tape path system (TG-1, TG-2, TG-3, TG-4, pinch roller, capstan shaft) and lower drum using a very thin cotton swab (Ref. No. J-3) moistened with cleaning fluid.

Caution: Take care that the very thin cotton swab (Ref. No. J-3) does not touch the oil or grease of the various link mechanisms.

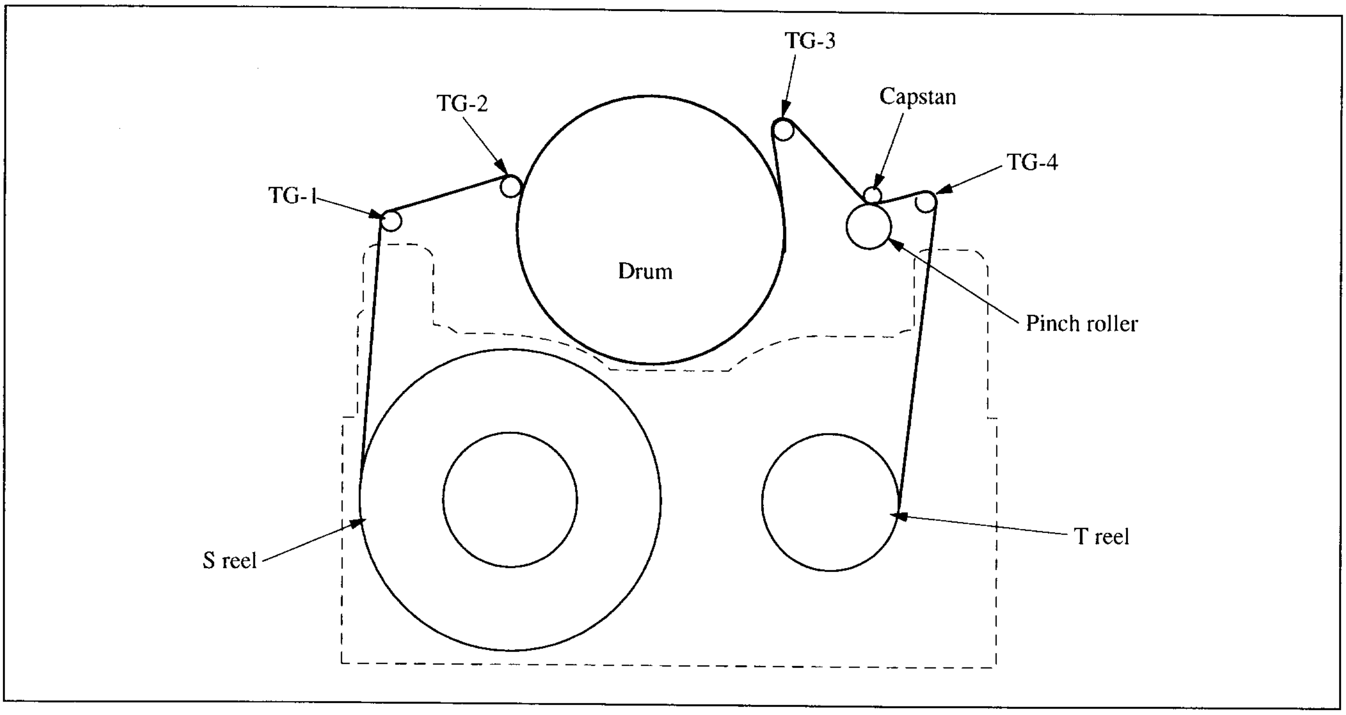


Fig. 3

2-3. Periodic Check Items

Maintenance and Inspection Points		Operating Hours										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape running surface	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Cleaning and degaussing of Rotary Drum Assy	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
Drive System	Timing Belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-965-546-01
	Capstan Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Take great care not to let any oil contact the tape running surface.
	Change Gear Shaft Relay Pulley Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading Motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3945-401-1
Performance Check	Abnormal Sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Tape Hold-back Tension Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake System	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD RVS } Torque Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○Cleaning ◎Lubrication ☆Check

Note: When overhauling the machine, replace the parts while referring to the above table.

Note: Regarding oil

- Be sure to use the specified oil. (If the viscosity and other characteristics are different, various troubles may arise.)
  Oil: Sony part No. 7-661-018-18
  (Mitsubishi diamond oil hydro fluid NT-68)
- For the oil lubricated bearings, use oil free from dust or foreign materials. If the oil contains any dust or foreign material, the bearings will wear out quickly or burn out.
- One drop of oil is the amount of oil which forms at the tip of a stick of 2 mm diameter.

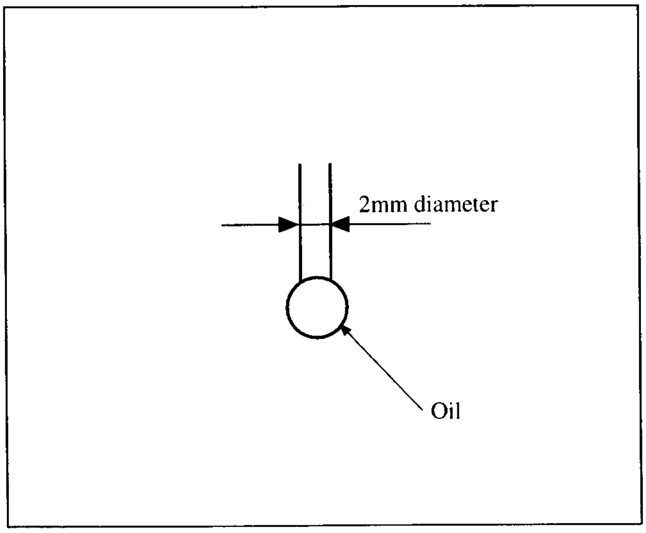


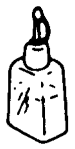
Fig. 4

2-4. Service Tool List

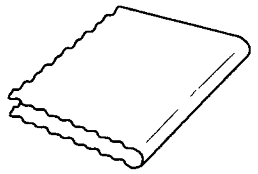
Ref. No.	Name	Parts Code	Tool Stamp	Applications
J-1	Cleaning fluid	Y-2031-001-0	——	
J-2	Cleaning piece	2-034-697-00	——	
J-3	Very thin cotton swab (made by Nippon Cotton Swab Inc. (P752D))		——	
J-4	Head demagnetizer	Commercially available	——	
J-5	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape (NTSC : WR5-1NP) (PAL : WR5-1CP)	8-967-995-02 8-967-995-07	——	Tape path
J-7	FWD/RVS take-up torque cassette	J-6080-824A	GD-2086	
J-8	Screwdriver for tape path adjustment	J-6082-026-A	——	For tape guide adjustment
J-9	FWD/BACK tension adjustment screwdriver	J-6082-187-A	——	
J-10	Remote commander for adjustment	J-6082-053-B	——	Tape path (Setting PATH mode)
J-11	MD process table	J-6082-166-A	——	
J-12	FLOIL Grease SG-941	7-662-001-39	——	
J-13	FLOIL Grease SG-055G	7-651-000-09	——	

Other equipment
- Oscilloscope
- Analog circuit tester (input impedance 20 kΩ)

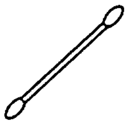
J-1



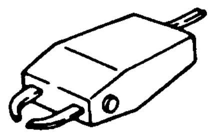
J-2



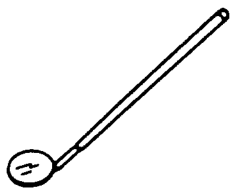
J-3



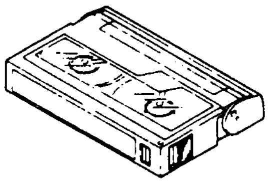
J-4



J-5



J-6



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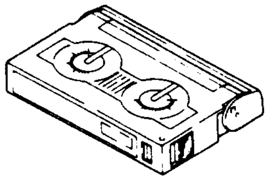
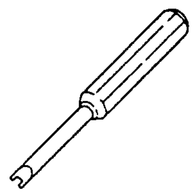
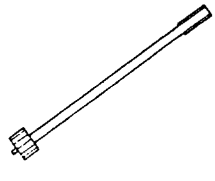


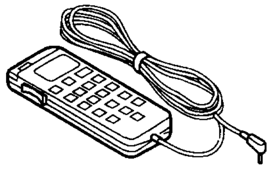
J-8



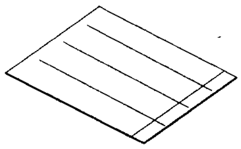
J-9



J-10

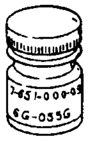


J-11



J-12

J-13



3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy (Refer to Fig. 5)

1. Disassembly Procedure

1) Remove the Torsion Spring ① from the cut-out Ⓐ of the motor holder. Hook it to the claw Ⓑ of the HC Arm.
2) Remove the HC Roller Block Assy in the direction shown by Ⓒ.
3) Remove the stop washer ② and remove the HC Roller Block Assy ③.

2. Precautions During Re-Assembly

1) After attaching the HC Roller Block Assy, confirm that both ends of the torsion spring are hooked to Ⓐ and Ⓓ.
2) Align the block so that the cut-out Ⓔ agrees with the rib Ⓕ.

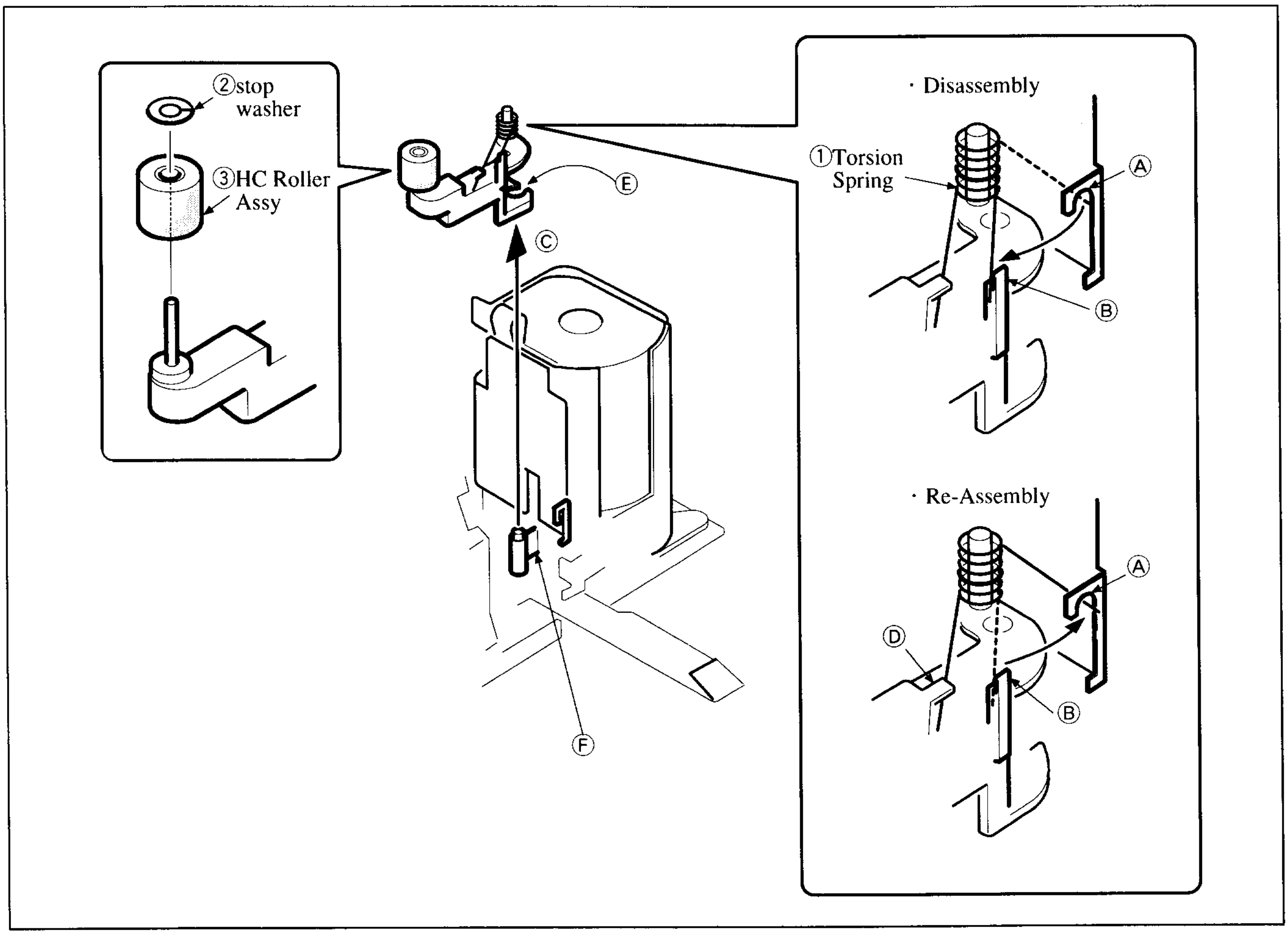

②stop washer
③HC Roller Assy
Ⓔ
Ⓒ
Ⓕ
· Disassembly
①Torsion Spring
Ⓐ
Ⓑ
· Re-Assembly
Ⓓ
Ⓐ
Ⓑ

Fig. 5

3-2. Drum Assy (Refer to Fig. 6)

1. Disassembly Procedure

1) Set the mechanism to $\boxed{\text{USE}}$ mode.
2) Remove the three screws (M 1.4) ① and remove the Drum Assy ②.

Caution: Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)

2. Precautions During Re-Assembly

1) Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)
2) When tightening the three screws (M 1.4), tighten them in the order Ⓒ, then Ⓓ, then Ⓔ.
3) After attaching the Drum Assy, perform the steps in section "4. TAPE PATH ADJUSTMENT".

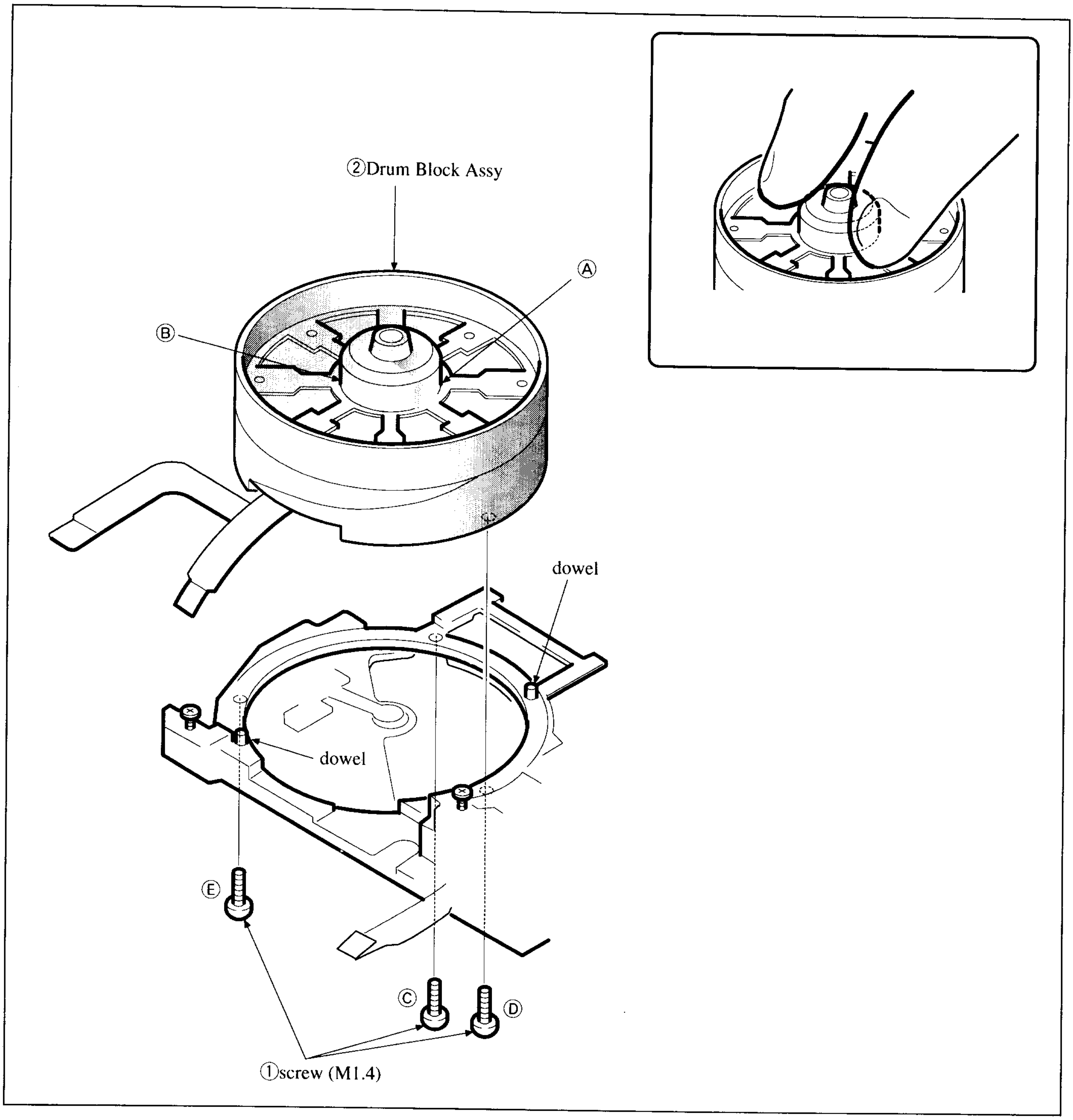


Fig. 6

3-3. Drum Base Block Assy, Shaft Ground (Refer to Fig. 7)

1. Disassembly Procedure

1) Remove the Drum Assy referring to section 3-2.
2) Remove the three screws (M 1.4×2.5) ① and remove the Drum Base Block Assy ②.
3) Remove the screw (M 1.7×1.4) ③ and remove the Shaft Ground ④.

Caution 1: Do not hold the spring portion of the Shaft Ground ④.

Caution 2: The loading motor can be removed while the mechanism is in this state. However, do not move any other mechanical parts (especially gears and cams around the rotary switch) when removing the loading motor. (Refer to 3-11.)

2. Precautions During Re-Assembly

1) Do not touch the spring portion of the Shaft Ground ④.
2) When tightening the three screws (M 1.4×2.5), tighten them in the order of Ⓐ, then Ⓑ, then Ⓒ.
3) After re-assembly is completed, perform the steps in section "4. TAPE PATH ADJUSTMENT".

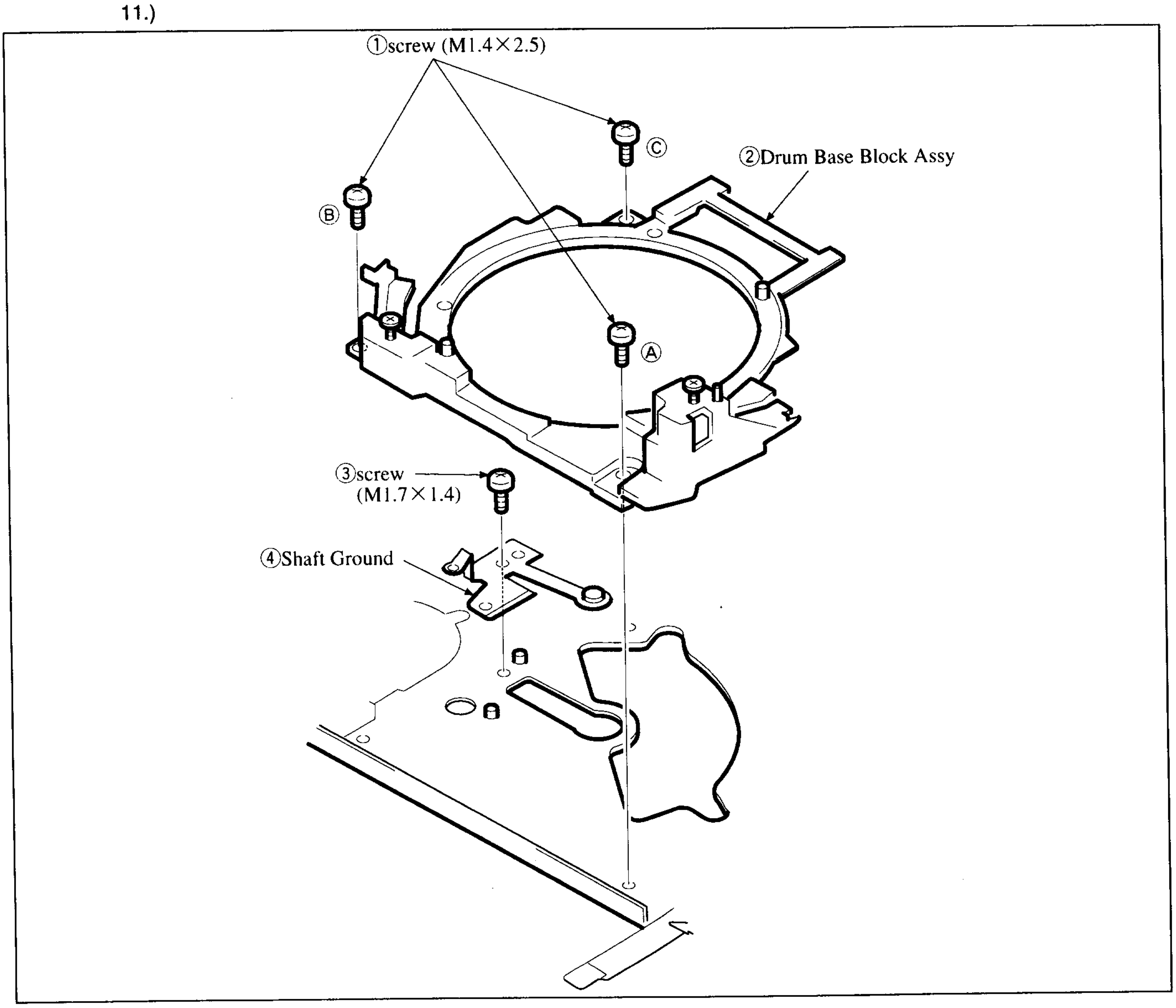


Fig. 7

3-4. Gooseneck Retainer, Gooseneck Gear Assy (Refer to Fig. 8)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the LED ① from the LED holder of the Gooseneck Retainer ③.
(Turn the flexible board 90° outside and remove it upward.)
3) Remove the three screws (M 1.4×2.5) ② and remove the Gooseneck Retainer ③.
4) Remove the stop washer ④ and remove the Gooseneck Gear Assy ⑤.

2. Precautions During Re-Assembly

1) When attaching the Gooseneck Retainer ③, take care that the Gooseneck Retainer ③ does not collide with the tension regulator band. (The tension regulator band must be located inside.)
2) Hook the T-side claw on the guide.

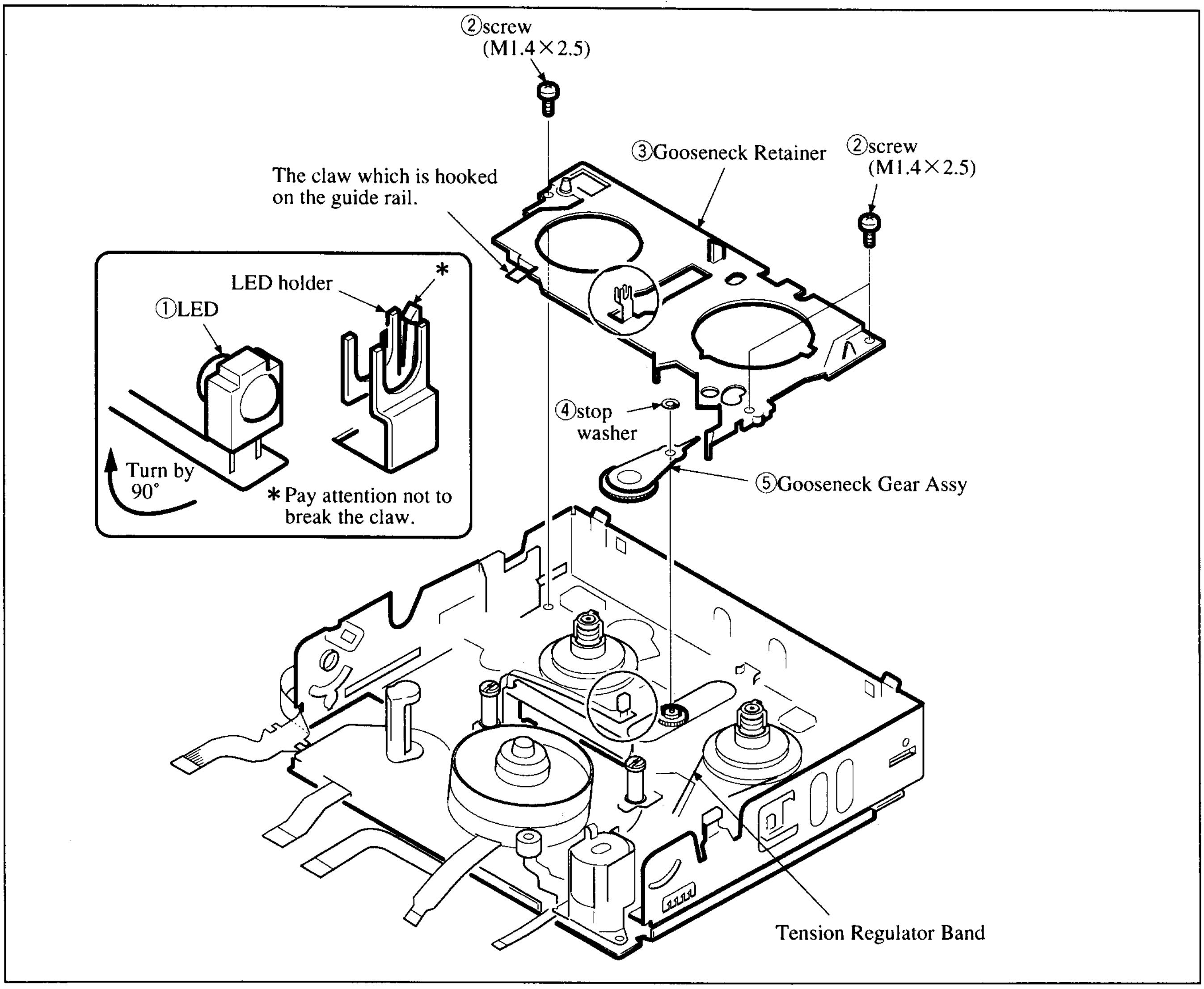

②screw (M1.4×2.5)
③Gooseneck Retainer
②screw (M1.4×2.5)
The claw which is hooked on the guide rail.
LED holder
*
①LED
Turn by 90°
* Pay attention not to break the claw.
④stop washer
⑤Gooseneck Gear Assy
Tension Regulator Band

Fig. 8

3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy (Refer to Fig. 9)

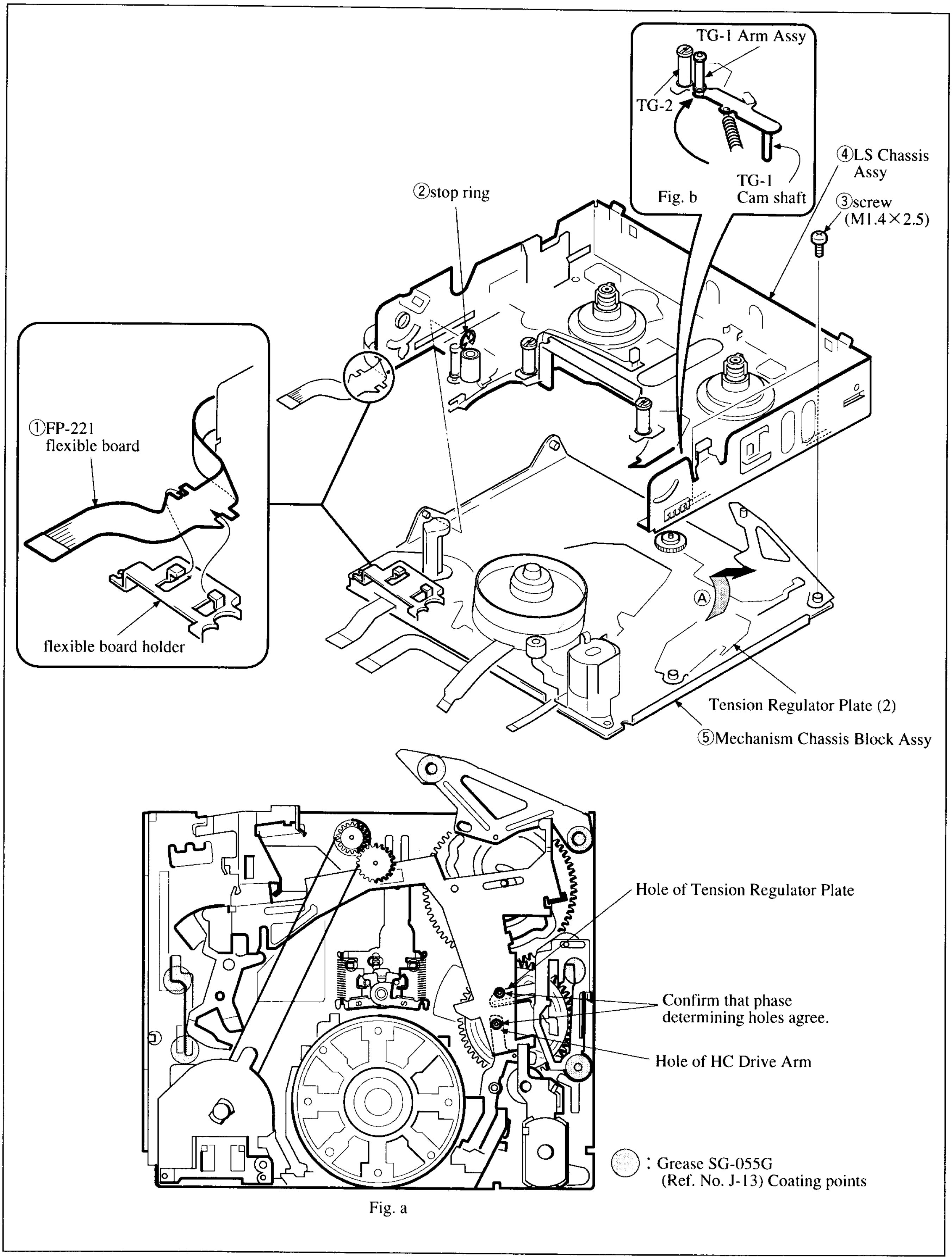
1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the FP-221 flexible board ① from the flexible board holder.
4) Remove the stop ring E1.5 ②.
5) Remove the two screws (M 1.4×2.5) ③ and remove the LS Chassis Block Assy ④ from the Mechanical Chassis Block ⑤ in the direction of the arrow Ⓐ.

Note: The Tension Regulator Plate (2) can easily fall into the Mechanical Chassis Block Assy. Take care not to drop it.

2. Precautions During Re-Assembly

1) Before attaching the LS Chassis Block Assy, confirm that the respective phase-determining holes have been adjusted for correct phase. Also confirm that the specified locations of the Mechanical Chassis Block Assy and the LS Chassis Block Assy are coated with grease SG-055G (Ref. No. J-13). (Refer to Fig. a)
2) When attaching the LS Chassis Block Assy, insert the LS Cam Plate (on the LS chassis side) into the dowel (on the mechanical chassis side). Also insert the TG1 Cam Axis (on the LS chassis side) into the Tension Regulator Plate (2) (on the mechanical chassis side).
3) When attaching these block assemblies, attach them while pressing the TG-1 Arm Assy in the direction toward the TG-2 Guide. (Refer to Fig. b)
4) Pay attention that the TG-1 Arm is not floated.


TG-1 Arm Assy
TG-2
TG-1
Cam shaft
Fig. b
④LS Chassis Assy
③screw (M1.4×2.5)
②stop ring
①FP-221 flexible board
flexible board holder
Ⓐ
Tension Regulator Plate (2)
⑤Mechanism Chassis Block Assy
Hole of Tension Regulator Plate
Confirm that phase determining holes agree.
Hole of HC Drive Arm
B
S
Fig. a

: Grease SG-055G (Ref. No. J-13) Coating points

Fig. 9

- **PARTS CONSTITUTING THE LS CHASSIS.**

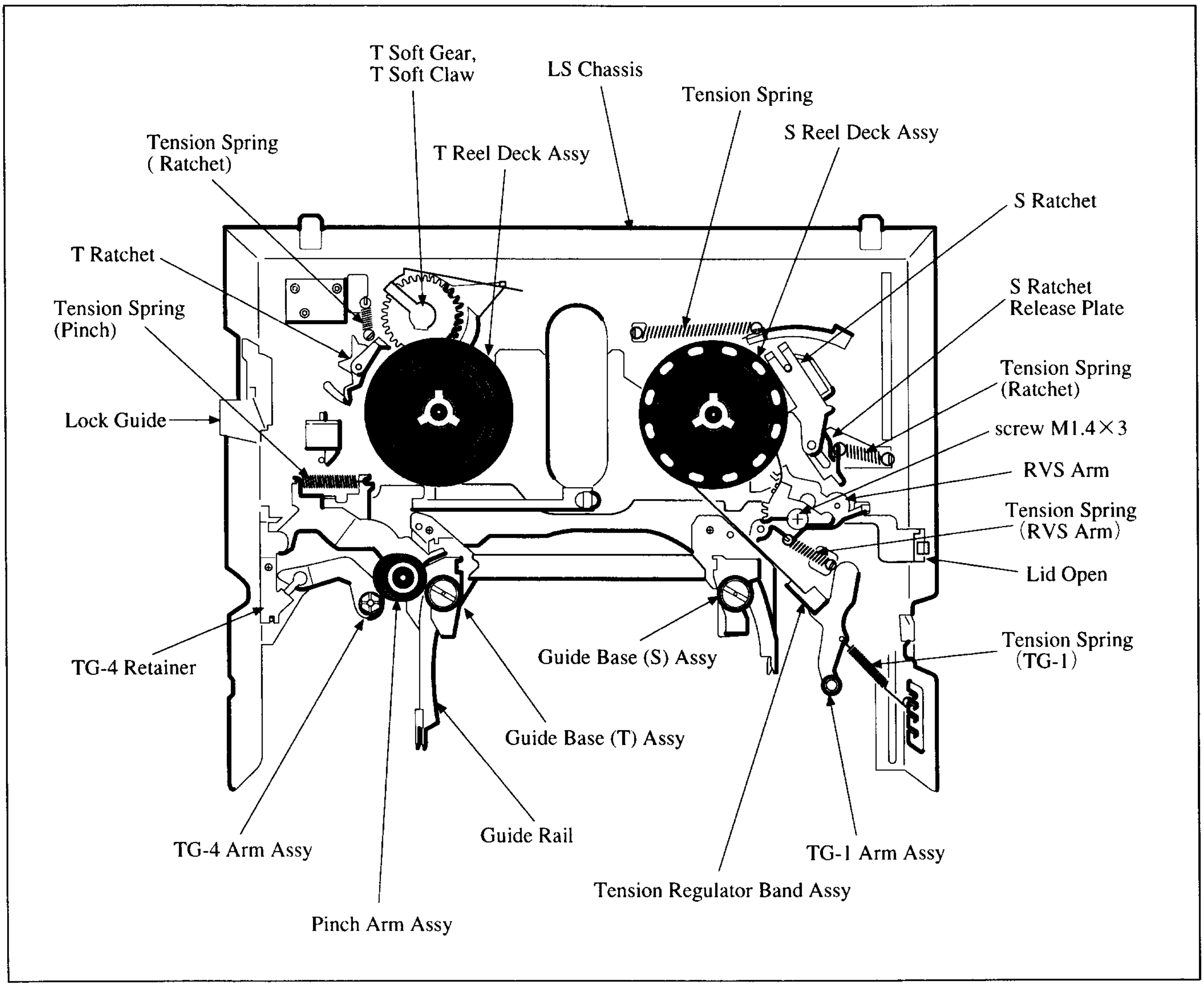

T Soft Gear,
T Soft Claw
LS Chassis
Tension Spring
Tension Spring
(Ratchet)
T Reel Deck Assy
S Reel Deck Assy
S Ratchet
T Ratchet
Tension Spring
(Pinch)
S Ratchet
Release Plate
Tension Spring
(Ratchet)
Lock Guide
screw M1.4×3
RVS Arm
Tension Spring
(RVS Arm)
Lid Open
Tension Spring
(TG-1)
TG-4 Retainer
Guide Base (S) Assy
Guide Base (T) Assy
Guide Rail
TG-4 Arm Assy
TG-1 Arm Assy
Tension Regulator Band Assy
Pinch Arm Assy

Fig. 10

3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy (Refer to Fig. 11)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the claw of the T Reel Deck Assy ① from the chassis and remove the T Reel Deck Assy from its shaft.
4) Remove the Tension Spring (Ratchet) ② from the LS Chassis and turn the T Ratchet ③ in the direction of the arrow Ⓐ and remove it .
5) Turn the T Soft Gear Block Assy ④ in the direction of the arrow Ⓑ and remove it .

2. Precautions During Re-Assembly

1) Confirm that the protrusions of both the T Soft Gear Block Assy and T Ratchet are securely locked to the LS Chassis.
2) Be careful not to deform the claw.

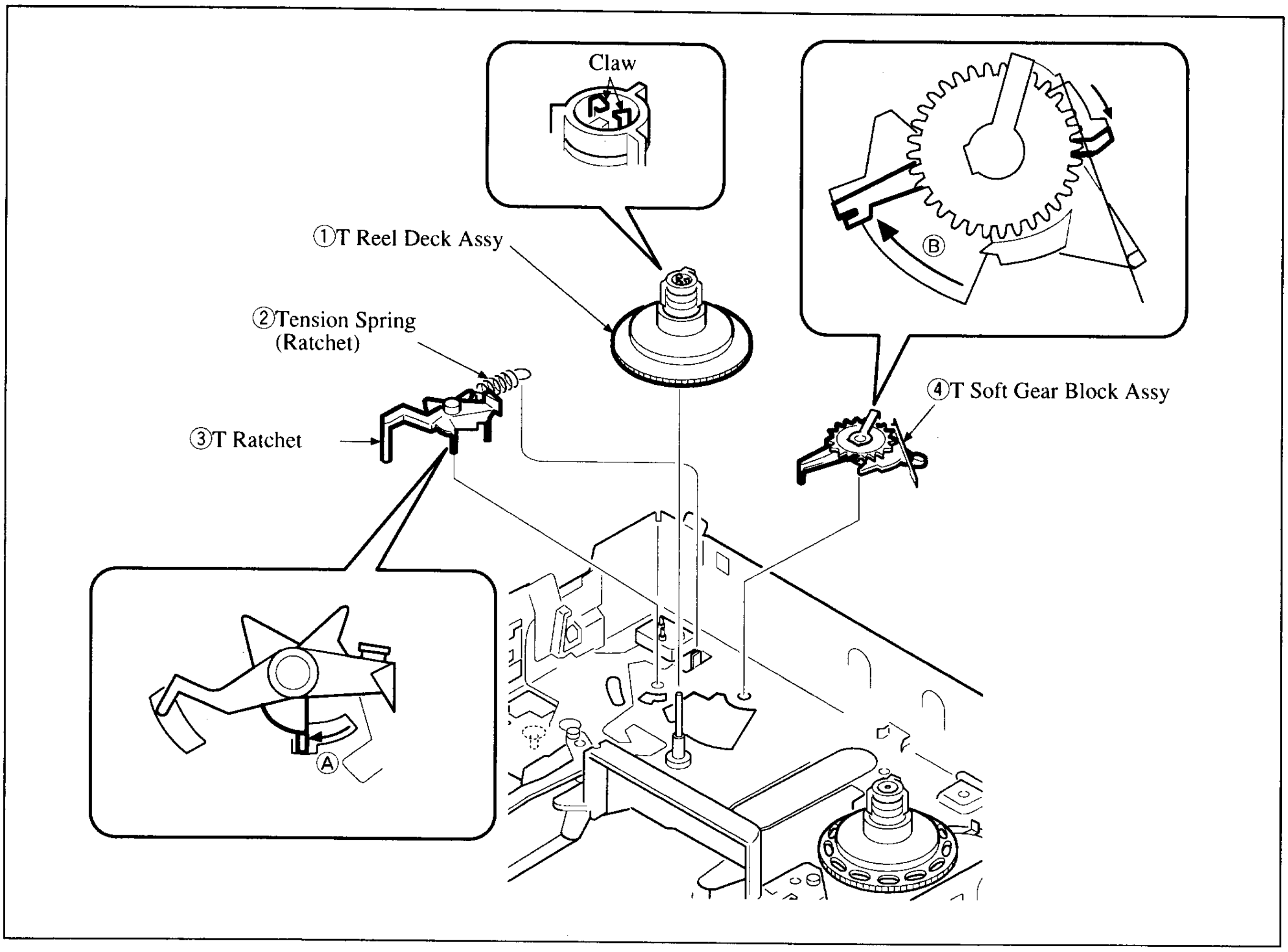


Fig. 11

3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm (Refer to Fig. 12)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the Tension Spring (TG1) ① from the LS Chassis.
4) Remove the screw (M 1.4×3) ② and remove the Tension Adjustment Block of the Tension Regulator Band Assy ④ form RVS Arm.
5) Release the S Ratchet ⑥ in the direction of the arrow Ⓐ and remove the Tension Regulator Band (while taking care not to bend the band) from the S Reel.
6) Remove the TG1 Arm Assy ③ from the LS Chassis, then remove the claw of the Tension Regulator Band Assy ④. (Refer to Fig. a)
7) Remove the claw of the S Reel Deck Assy ⑤ from the chassis and remove the S Reel Deck Assy from its shaft.
8) Remove the S Ratchet ⑥. (Because it is press-fitted, insert tip of screwdriver into the center of rotation and remove it.
9) Remove the Tension Spring (ratchet) ⑦ from the LS Chassis and remove the S Ratchet Release Plate ⑧.
10) Remove the Tension Spring ⑨ from the LS Chassis and remove the RVS Arm ⑩ by turning it..

2. Precautions During Re-Assembly

1) Confirm that the dowel of the S Ratchet Release Plate is inserted into the groove of the S ratchet and confirm that the center of the ratchet is press-fitted into bottom of the shaft. (It can be used again.)
2) When attaching the Tension Regulator Band Assy, take care not to bend it.
3) Pay attention that oil or grease is not spit on the surface of the Tension Regulated Band. (Pay attention also not to touch it with hand directly.)
4) Confirm that the tension regulator band is correctly inserted into the groove of the S Reel Deck Assy ⑤. (Refer to Fig. b)
5) When securing the Tension Adjustment Block using the screw, press it toward the position which gives the least tension, then tighten the fixing screw.
6) Before attaching the TG1 Arm Assy, coat the LS Chassis TG1 boss with oil (1/2 drop).
7) Do not touch the tape guide of the TG1 Arm Assy with bare hands.
8) Confirm that the claw of the S Reel Deck Assy is not deformed.

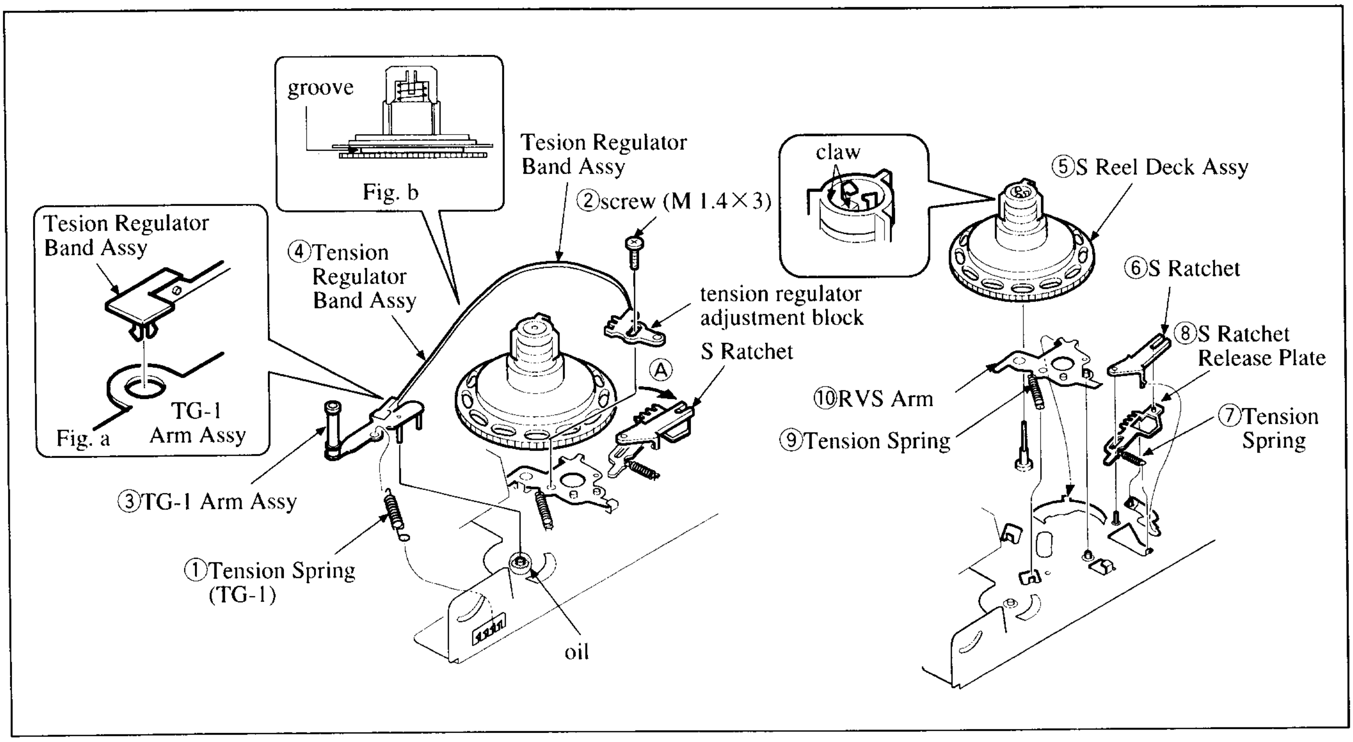

groove
Fig. b
Tesion Regulator Band Assy
②screw (M 1.4×3)
claw
⑤S Reel Deck Assy
Tesion Regulator Band Assy
④Tension Regulator Band Assy
⑥S Ratchet
tension regulator adjustment block
S Ratchet
Ⓐ
⑧S Ratchet Release Plate
TG-1 Arm Assy
Fig. a
⑩RVS Arm
⑨Tension Spring
⑦Tension Spring
③TG-1 Arm Assy
①Tension Spring (TG-1)
oil

Fig. 12

3-8. Pinch Arm Assy, TG4 Arm Block Assy (Refer to Fig. 13)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the Torsion Spring (pinch) ① from an end of Pinch Arm and hook it on the cut-out Ⓐ of the LS Chassis.
5) Remove the screw (M 1.4×2.5) ② and remove the TG4 Retainer ③.
6) Remove the TG4 Arm Block Assy ④ and remove the Torsion Spring ⑤ while paying attention to the Torsion Spring ⑤.
7) Remove the Pinch Arm Assy ⑥. (Caution: The Pinch Press Roller is easy to drop. Pay attention not to drop it.)
8) Remove the Torsion Spring (pinch) ① from the cut-out of the LS Chassis in the order of Ⓐ then Ⓑ.

2. Precautions During Re-Assembly

1) Before attaching these parts, coat the LS chassis pinch arm boss and TG4 arm boss with grease SG-055G (Ref. No. J-13).
2) Do not touch the tape guide of the TG4 Arm Block Assy and roller of the Pinch Arm Assy with bare hand.
3) After coating the Pinch Press Shaft of the Pinch Arm Assy ③ with grease SG-055G (Ref. No. J-13), attach the Pinch Press Roller.

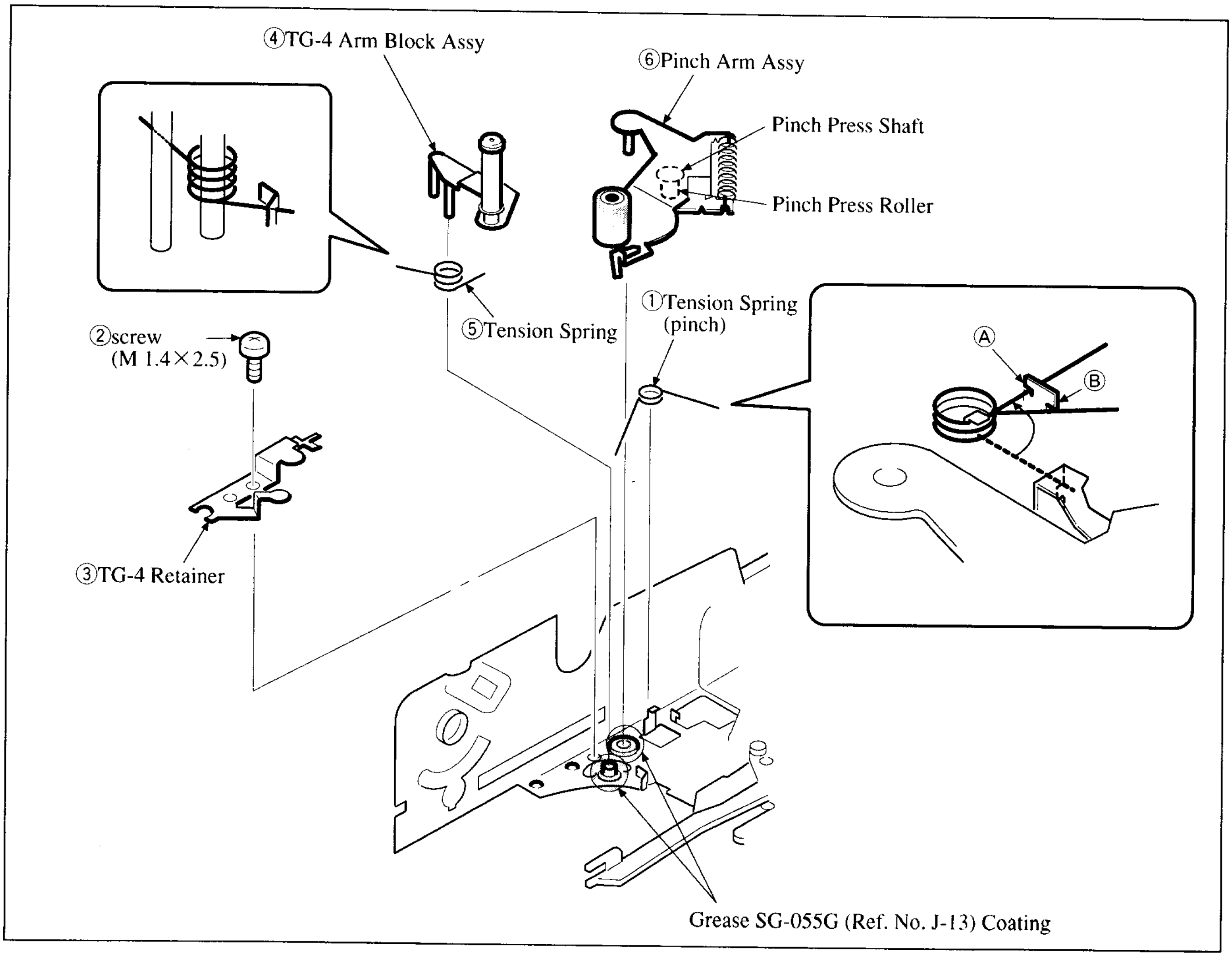

④TG-4 Arm Block Assy
⑥Pinch Arm Assy
Pinch Press Shaft
Pinch Press Roller
②screw (M 1.4×2.5)
⑤Tension Spring
①Tension Spring (pinch)
Ⓐ
Ⓑ
③TG-4 Retainer
Grease SG-055G (Ref. No. J-13) Coating

Fig. 13

3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide (Refer to Fig. 14)

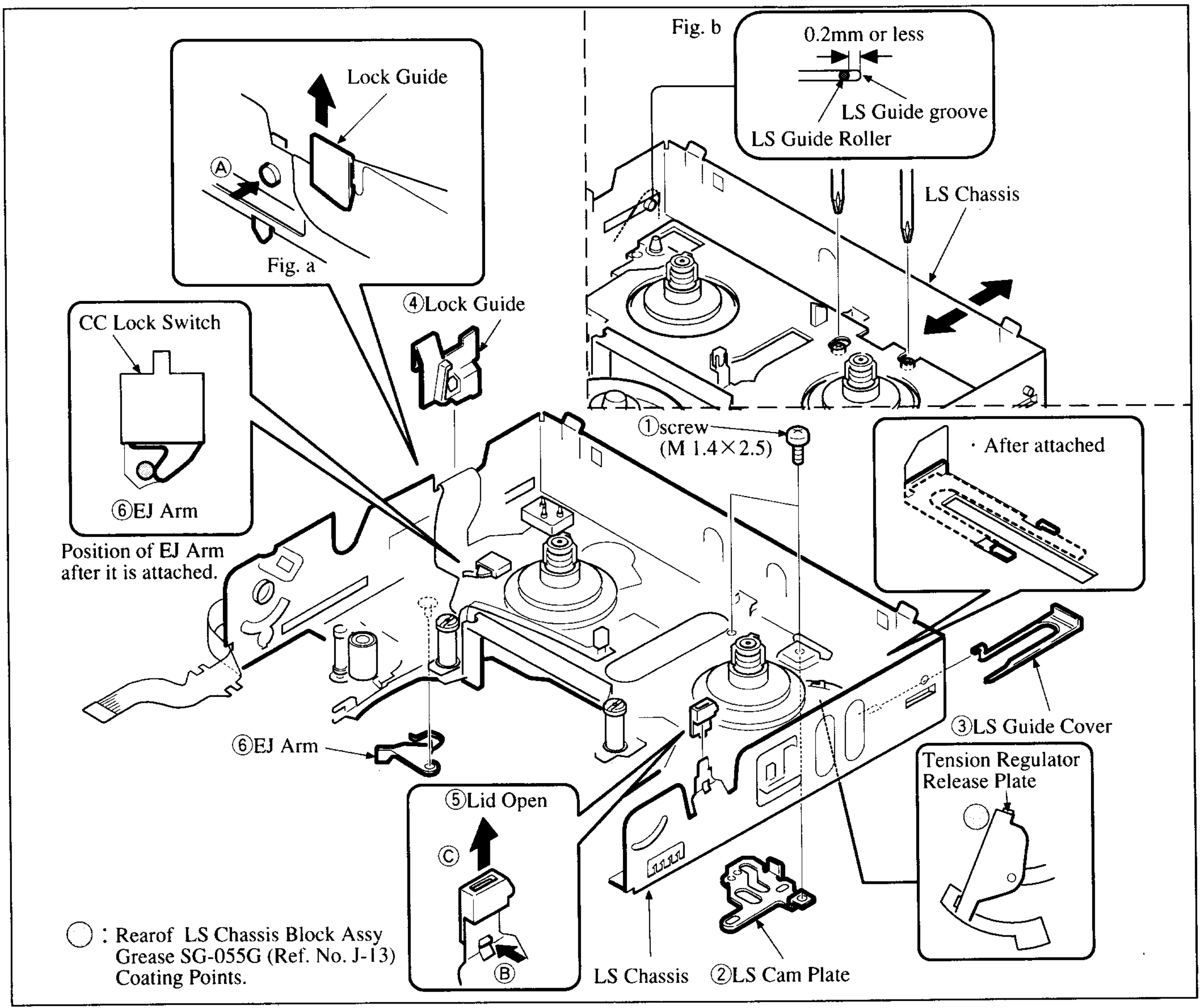
1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the two screws (M 1.4×2.5) ① and remove the the LS Cam Plate ②.

   In this state, write a mark on the screw ① and on the LS Chassis indicating the position of the LS Cam Plate which helps during re-assembly.
5) Remove the LS Guide Cover ③.
6) Remove the Lock Guide ④ in the upward direction. (Refer to Fig. a)
7) Remove the Lid Open ⑤ in the direction of the arrow Ⓒ while pushing Ⓑ portion .
8) Remove the EJ Arm ⑥ . (The EJ Arm ⑥ is press-fitted. If the EJ Arm ⑥ is not damaged, it is not necessary to replace.)

2. Precautions During Re-Assembly

1) After the captioned parts are attached, confirm that the respective claws and dowels are engaged completely.
2) If the EJ Arm ⑥ is removed, be sure to replace it with the new replacement EJ Arm.
3) If any mark is not written when removing the LS Cam Plate ②, adjust and attack it as shown in Fig. b.



Lock Guide
Ⓐ
Fig. a
Fig. b
0.2mm or less
LS Guide groove
LS Guide Roller
LS Chassis
④Lock Guide
CC Lock Switch
⑥EJ Arm
Position of EJ Arm after it is attached.
①screw (M 1.4×2.5)
· After attached
⑥EJ Arm
⑤Lid Open
Ⓒ
Ⓑ
③LS Guide Cover
Tension Regulator Release Plate
○ : Rearof LS Chassis Block Assy Grease SG-055G (Ref. No. J-13) Coating Points.
LS Chassis
②LS Cam Plate

Fig. 14

3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail (Refer to Fig. 15)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) While pushing the GB Stoppers (S) and (T) in the direction of arrow Ⓐ, press the guide arm in the direction of the arrow Ⓑ, and turn the Guide Base (S) and (T) Block Assemblies : ① and ② in the direction of the arrow Ⓒ respectively, and remove them.
5) Remove the two screws (M 1.4×2.5) ③ and remove the the Guide Rail Assy ④.
6) Remove the Stopper (S) and (T) : ⑤ and ⑥, then remove the GB Stopper S and T: ⑦ and ⑧.

2. Precautions During Re-Assembly

1) Pay attention not to deform the Guide Rail.
2) Do not touch the tape guide of the Guide Base (S) and (T) Block Assemblies with bare hand.
3) Pay attention not to deform the Stoppers (S) and (T).
4) When attaching the Guide Base (S) and (T) Blocks to the Guide Rail, move back the Guide Bases until the GB Stoppers (S) and (T) are locked. ("Click" sounds.)
5) After the captioned parts are attached, perform section "4. TAPE PATH ADJUSTMENT".

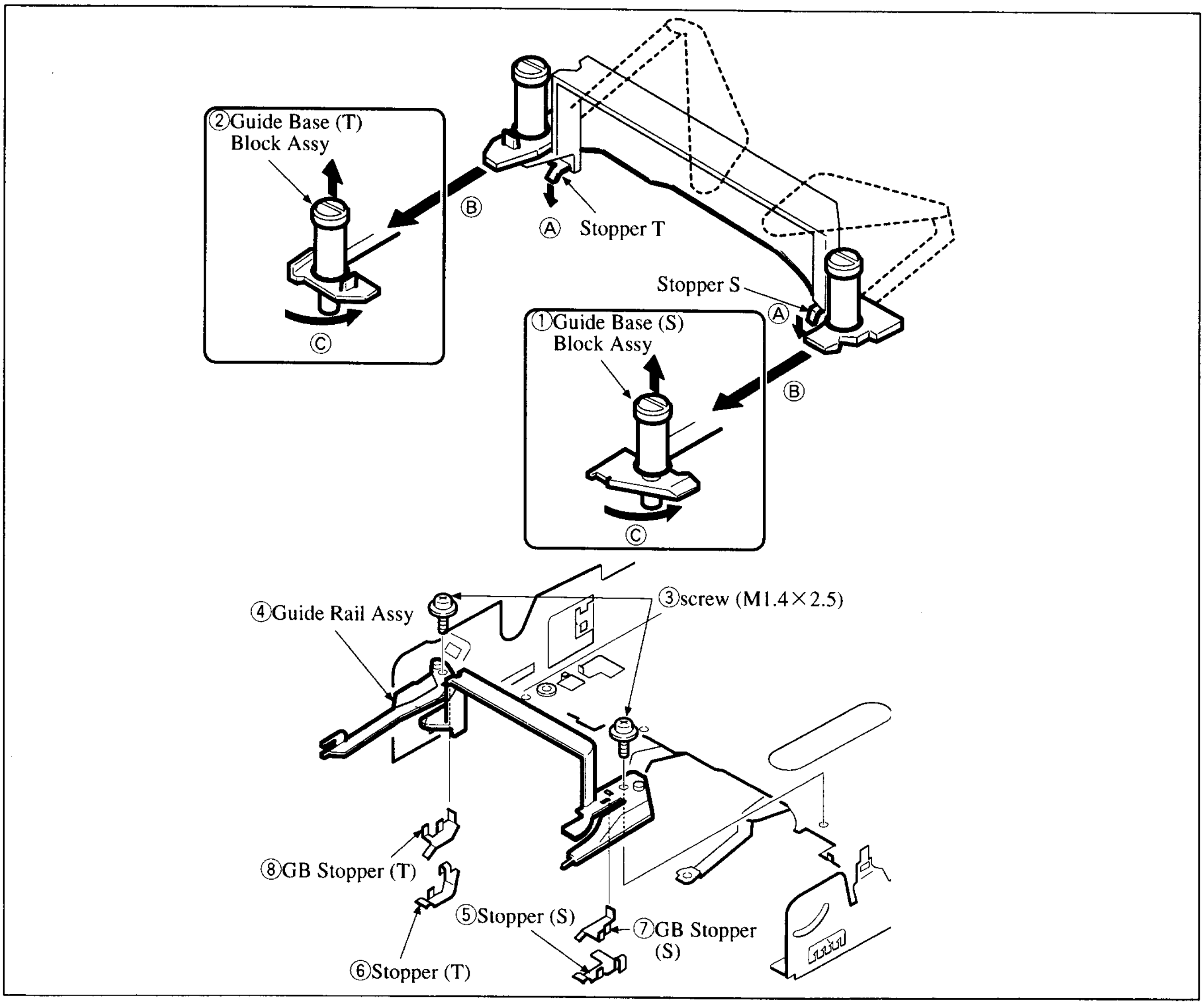

②Guide Base (T)
Block Assy
Ⓑ
Ⓐ Stopper T
Ⓒ
Stopper S
Ⓐ
①Guide Base (S)
Block Assy
Ⓑ
Ⓒ
④Guide Rail Assy
③screw (M1.4×2.5)
⑧GB Stopper (T)
⑤Stopper (S)
⑦GB Stopper (S)
⑥Stopper (T)

Fig. 15

MC-Service

- **PARTS CONSTITUTING THE MECHANISM CHASSIS**

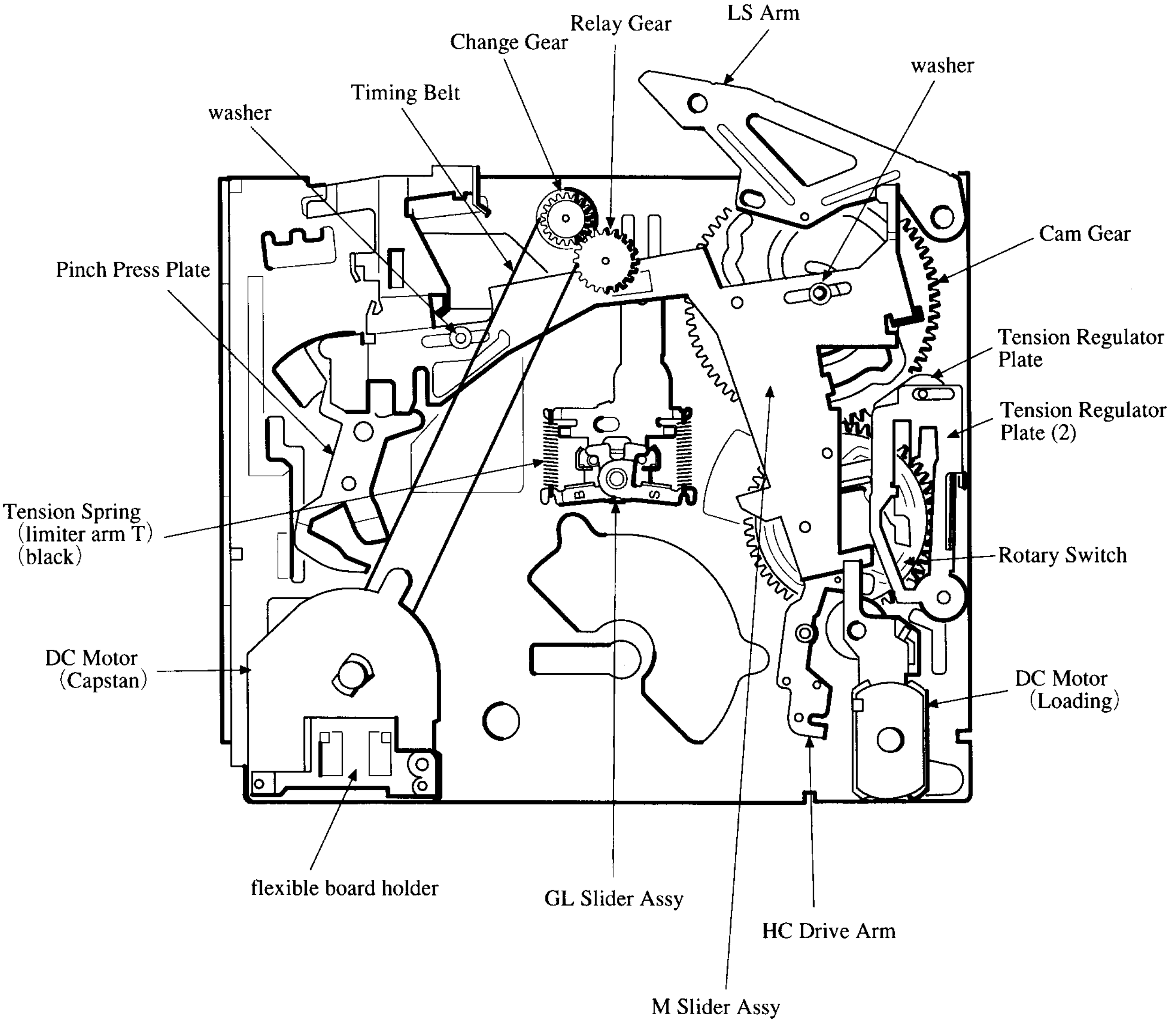

Relay Gear
LS Arm
Change Gear
washer
Timing Belt
washer
Cam Gear
Pinch Press Plate
Tension Regulator Plate
Tension Regulator Plate (2)
Tension Spring (limiter arm T) (black)
Rotary Switch
DC Motor (Capstan)
DC Motor (Loading)
flexible board holder
GL Slider Assy
HC Drive Arm
M Slider Assy

Fig.16

3-11. DC Motor Assy (Loading)
(Refer to Fig. 17)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove soldering from the Ⓐ portion.
8) Remove the screw (M 1.4×2.5) ① and remove the Motor Holder Block Assy ② from the mechanism chassis along with the claw beneath the Motor Holder Block Assy as shown by the arrow Ⓑ.
9) Remove the Motor Shield ③ in the direction of the arrow Ⓒ (by opening the two ★ star marked points).
10) Release the claw on top of the Motor Holder ⑤ and remove the DC Motor Assy ④ in the direction of the arrow Ⓓ.
11) Remove the Motor Holder Sleeve ⑥, Gear A⑦ and Worm Shaft ⑧ in this order.

2. Precautions During Re-Assembly

1) Before attaching the Gear A ⑥, coat the Retainer Shaft Ⓔ with grease SG-055G (Ref. No. J-13).
2) After assembling the Motor Holder Block Assy, coat the six locations shown by Fig. a with grease SG-055G (Ref. No. J-13).
3) The HC Drive Arm is easy to drop. Confirm that it is attacked referring to Fig. 19.

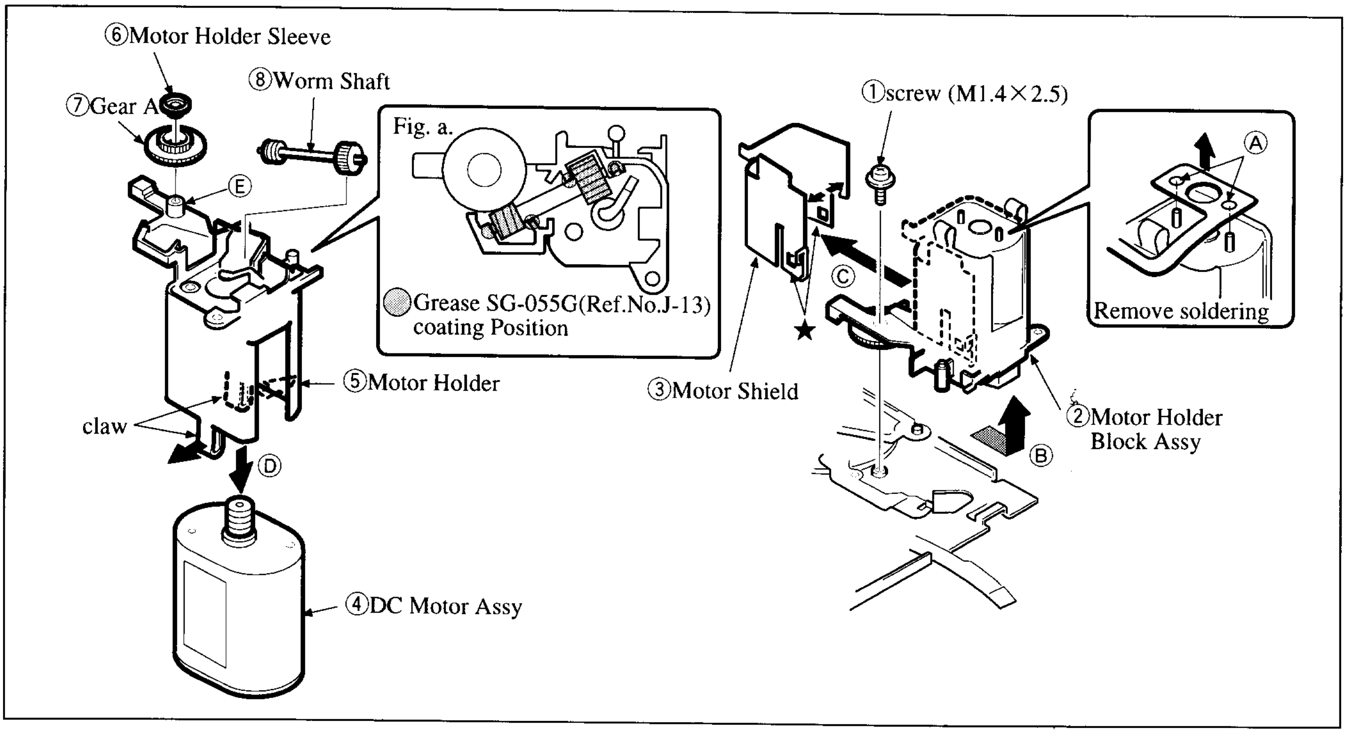

⑥Motor Holder Sleeve
⑧Worm Shaft
⑦Gear A
Ⓔ
Fig. a.
●Grease SG-055G(Ref.No.J-13) coating Position
⑤Motor Holder
claw
Ⓓ
④DC Motor Assy
①screw (M1.4×2.5)
Ⓐ
Remove soldering
Ⓒ
★
③Motor Shield
②Motor Holder Block Assy
Ⓑ

Fig. 17

3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy (Refer to Fig. 18)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC motor referring to section 3-11.
8) Remove the Tension Regulator Plate 2 ①.
9) Remove the Relay Gear ②.
10) Remove the two washers ③. Remove the M Slider Assy ④. At the point, confirm that the LS Roller ⑤ is not dropped.

2. Precautions During Re-Assembly

1) Before attaching the M Slider Assy ④, coat the LS Roller Shaft Ⓐ on the back of the M Slider Assy, the Pinch Press Plate Shaft Ⓑ and the mechanism chassis M Slider Axis Ⓒ with grease SG-055G (Ref. No. J-13). (Refer to Fig. b)
2) While confirming the phase-determining holes, attach the M Slider Assy ④ while paying attention to the claw.
3) Attach the Tension Regulator Plate 2 ① inside the Tension Regulator Plate. (Refer to the asterisk * Marked portion of Fig. a)
4) Before attaching the Relay Gear ②, coat the mechanism chassis Relay Gear Axis Ⓓ with grease SG-055G (Ref. No. J-13).

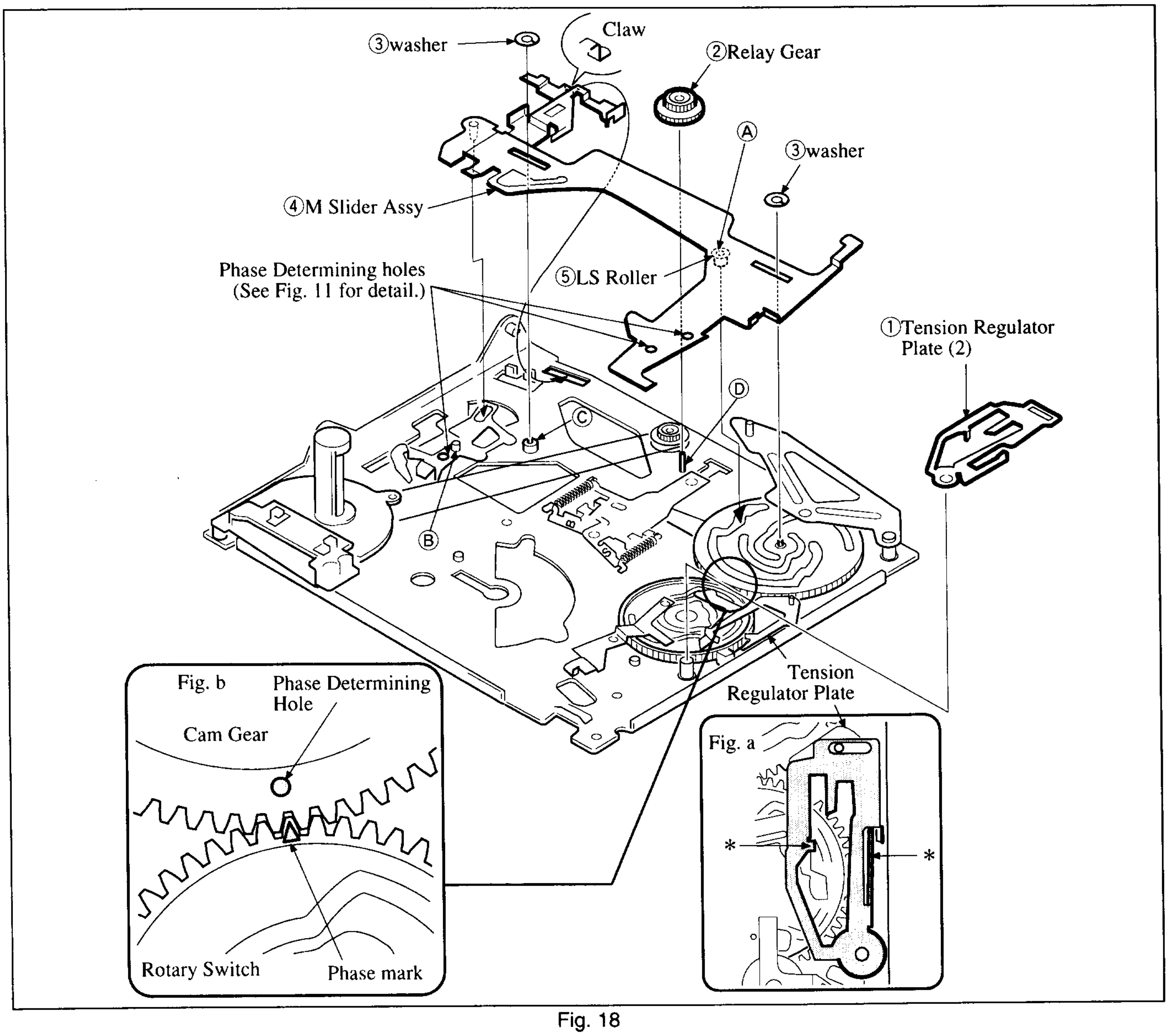

③washer
Claw
②Relay Gear
Ⓐ
③washer
④M Slider Assy
Phase Determining holes
(See Fig. 11 for detail.)
⑤LS Roller
①Tension Regulator
Plate (2)
Ⓓ
Ⓒ
Ⓑ
Tension
Regulator Plate
Fig. b
Phase Determining
Hole
Cam Gear
Rotary Switch
Phase mark
Fig. a
*
*

Fig. 18

3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate (Refer to Fig. 19)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm ①. At this point, confirm that the LS Roller ② is not dropped.
10) Remove the HC Drive Arm ③, Pinch Press Plate ④ and Tension Regulator Plate ⑤.

2. Precautions During Re-Assembly

1) Before attaching the captioned parts, confirm that phases of the Cam Gear and the Rotary Switch agree. (See Fig. a.)
2) Insert the dowel of the Tension Regulator Plate ⑤ into the groove outside the rotary switch.
3) Before attaching the Pinch Press Plate ④, check for grease on the mechanism chassis Pinch Press Plate Shaft Ⓐ. If grease cannot be found, coat it with grease SG-055G (Ref. No. J-13). After attaching the Pinch Press Plate ④, align its phase hole until it agrees with the phase-determining hole on the mechanism chassis.
4) Insert the dowel of the HC Drive Arm ③ into the groove inside the rotary switch.
5) Before attaching the LS Arm ①, coat the LS roller shaft of the LS Arm ① with grease SG-055G (Ref. No. J-13).

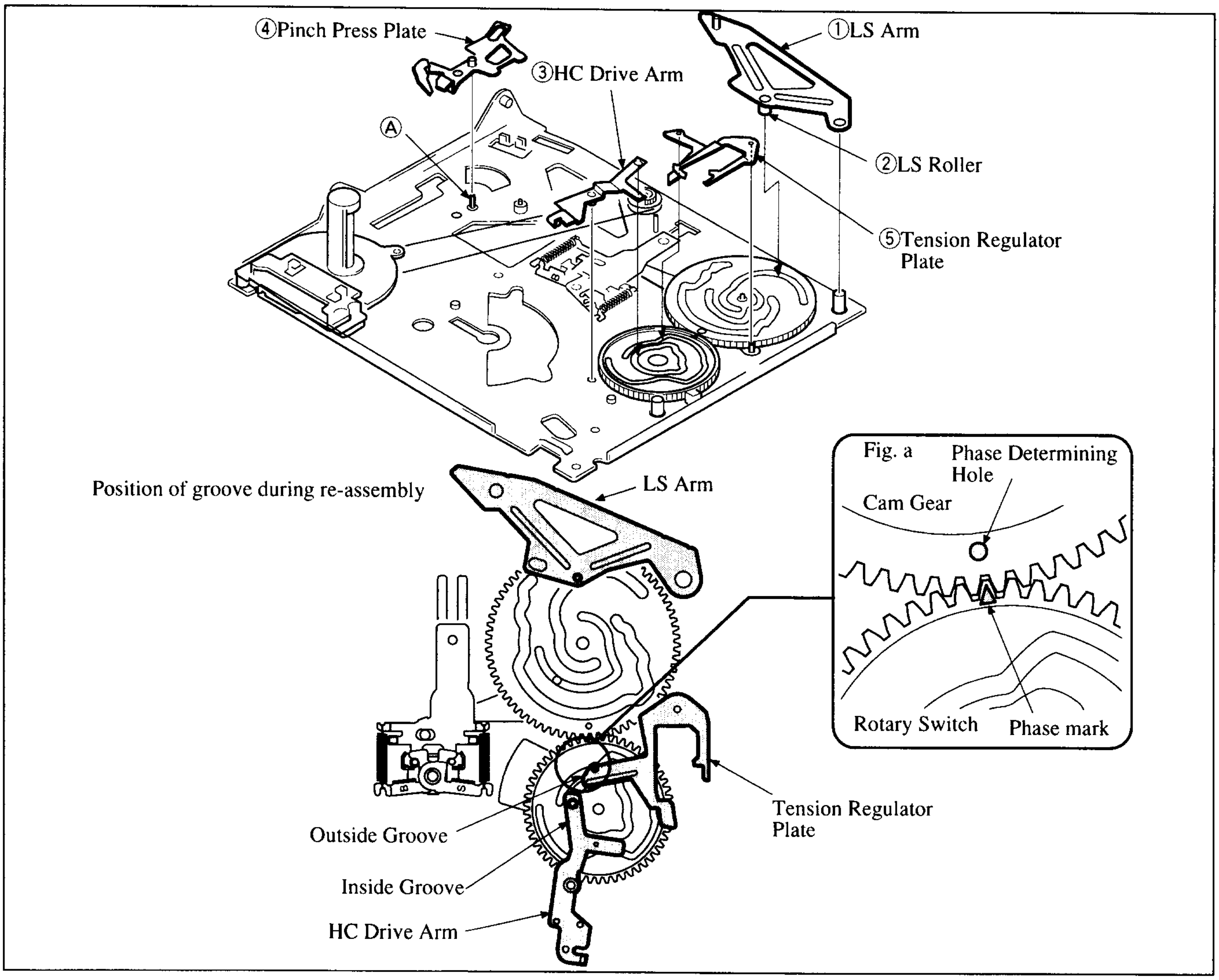

④Pinch Press Plate
③HC Drive Arm
①LS Arm
Ⓐ
②LS Roller
⑤Tension Regulator Plate
Position of groove during re-assembly
LS Arm
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Outside Groove
Inside Groove
HC Drive Arm
Tension Regulator Plate

Fig. 19

3-14. Cam Gear (Refer to Fig. 20)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear ①.

2. Precautions During Re-Assembly

1) Before attaching the Cam Gear ①, align the phase mark on the rotary switch until it agrees with the phase-determining hole Ⓐ on the mechanism chassis, and align the GL Arm's phase mark Ⓑ until it agrees with the phase-determining hole Ⓐ on the mechanism chassis. Coat the mechanism's chassis Gear Axis Ⓐ with grease SG-055G (Ref. No. J-13).
2) Attach the Cam Gear ① so that its phase hole agrees with the phase mark on the rotary switch. (Refer to Fig. a)
3) After the Cam Gear ① is attached, coat the GL Arm Axis Block of the cam gear with grease SG-055G (Ref. No. J-13).

Reference : The phase marks of the Cam Gear and Rotary Switch can also be checked from the rear side of mechanism chassis. It means that the phase can be confirmed after mechanism deck is fully re-assembled.

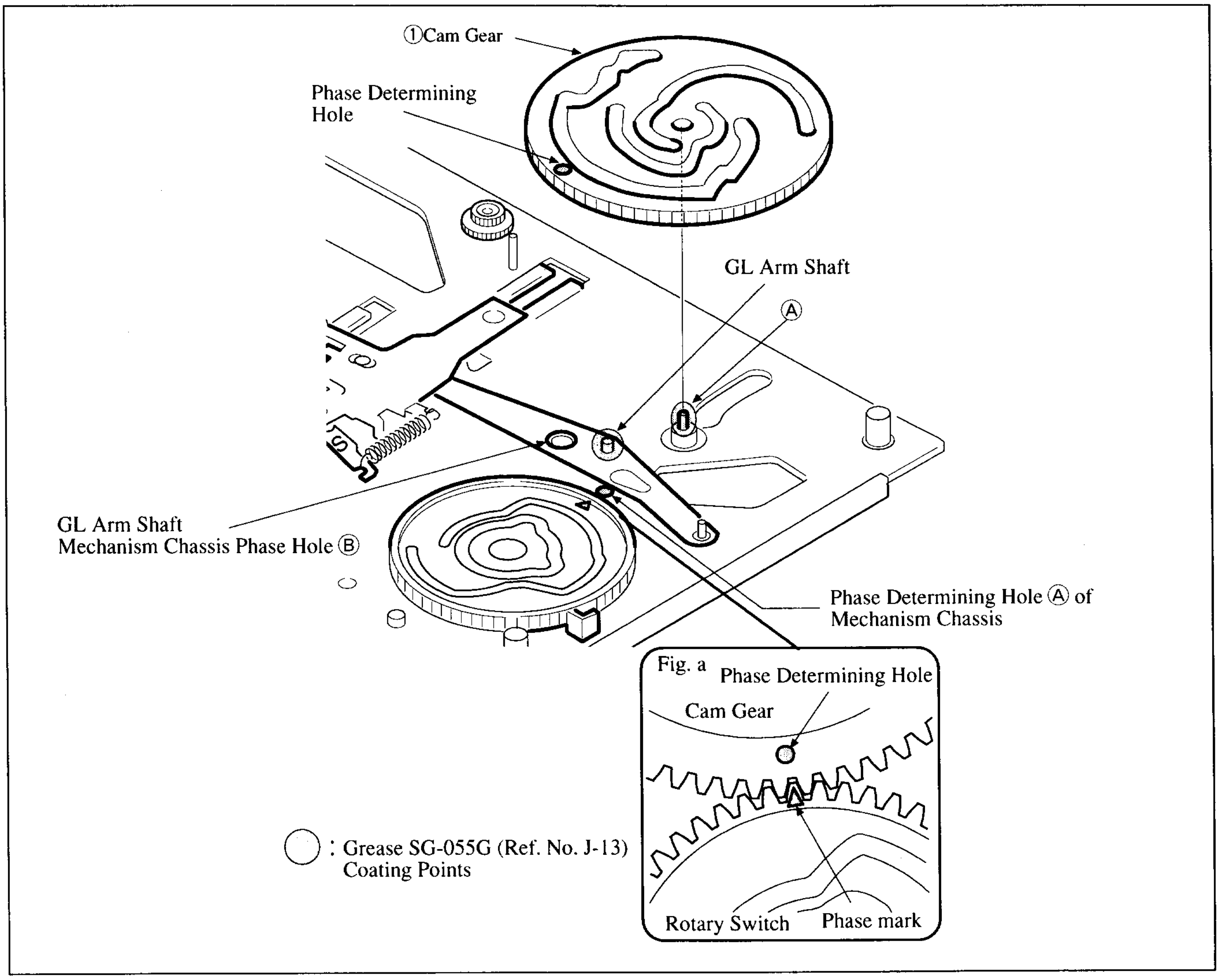

①Cam Gear
Phase Determining Hole
GL Arm Shaft
Ⓐ
GL Arm Shaft
Mechanism Chassis Phase Hole Ⓑ
Phase Determining Hole Ⓐ of Mechanism Chassis
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
○ : Grease SG-055G (Ref. No. J-13) Coating Points

Fig. 20

3-15. GL Slider Assy, GL Arm (Refer to Fig. 21)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove the GL Slider Assy ① by sliding it in the direction of the arrow Ⓐ.
12) Remove the GL Arm ②.

2. Precautions During Re-Assembly

1) The Tension Spring T③ is colored black and the Tension Spring S④ is colored silver.
2) Coat the position shown in Fig. a of the GL Slider Assy ① with grease SG-055G (Ref. No. J-13).
3) Coat the four points Ⓑ where GL slider is attached on the mechanism chassis with grease SG-055G (Ref. No. J-13).
4) After attaching the GL Arm ② and the GL Slider Assy, align the GL arm phase hole until it agrees with the phase-determining hole on the mechanism chassis.

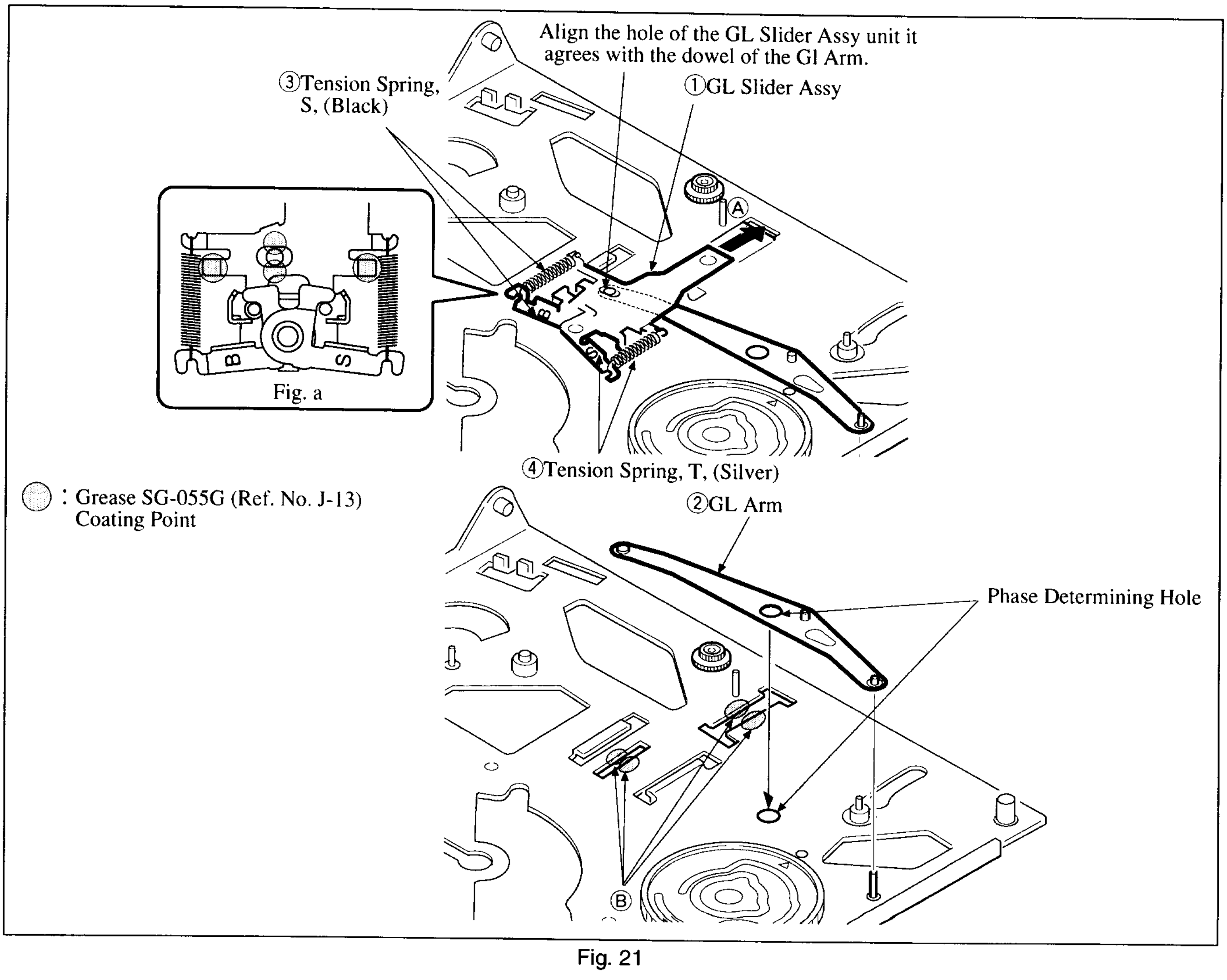

Align the hole of the GL Slider Assy unit it agrees with the dowel of the Gl Arm.
③Tension Spring, S, (Black)
①GL Slider Assy
Ⓐ
B
S
Fig. a
④Tension Spring, T, (Silver)
②GL Arm
Phase Determining Hole
Ⓑ
○ : Grease SG-055G (Ref. No. J-13) Coating Point

Fig. 21

3-16. Rotary Switch (Refer to Fig. 22)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm, Tension Regulator Plate, HC Drive Arm and Pinch Press Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove soldering the portion Ⓐ on the rear of the Rotary Switch. (Pay attention at this moment that the GL Slider and GL Arm do not drop.)
12) While lifting up the portion Ⓑ about 1 mm (pay attention not to break it), hold the portion Ⓒ and turn it in the direction of the arrow Ⓓ to remove the Rotary Switch.

2. Precautions During Re-Assembly

1) Before attaching the Rotary Switch by soldering on the FP-220 board, insert the portion Ⓑ dowel into the hole on the mechanism chassis. Confirm that the three claws are engaged with the mechanism chassis.

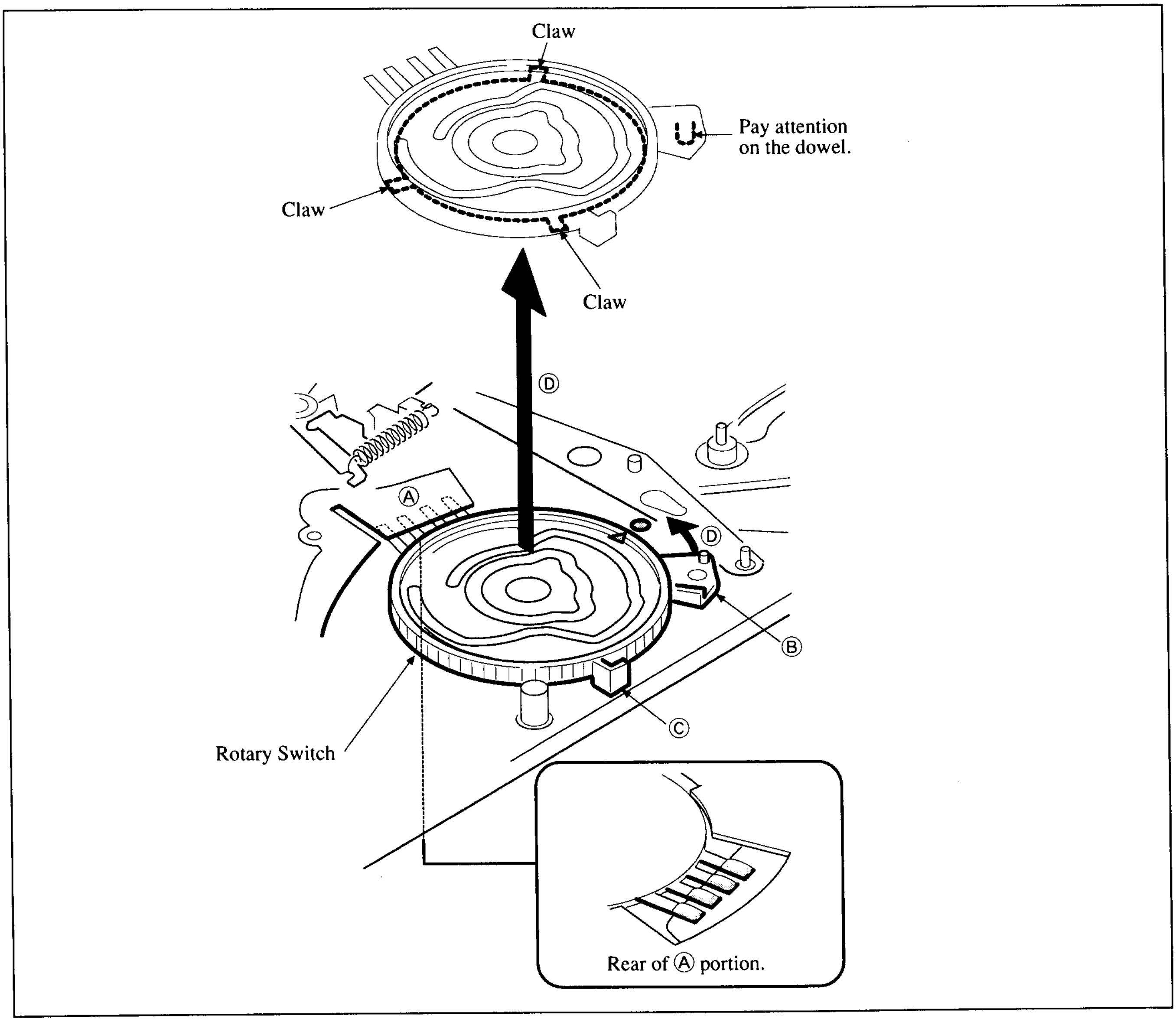


Fig. 22

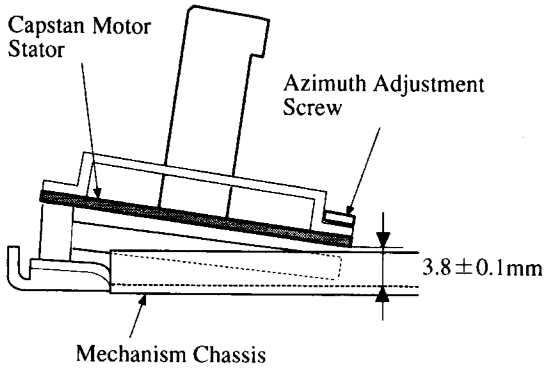
3-17. Capstan Motor (Refer to Fig. 23)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the Pinch Press Plate referring to section 3-13.
10) Remove the screw (M 1.4×6.7) ① and remove the Flexible Board Holder ②.
11) Remove the two screws (M 1.4×6.7) ③ and remove the Capstan Motor ④, Timing Belt ⑤ and Capstan Spacer ⑥.
12) Remove the washer ⑦ and remove the Changer Gear ⑧.

2. Precautions During Re-Assembly

1) Confirm that the timing belt is not twisted.
2) Do not touch the capstan with bare hand.
3) Lubricate the mechanism chassis's Change Gear shaft Ⓐ.
4) After attaching the Capstan Motor, perform the capstan azimuth adjustment.


Capstan Motor Stator
Azimuth Adjustment Screw
3.8±0.1mm
Mechanism Chassis

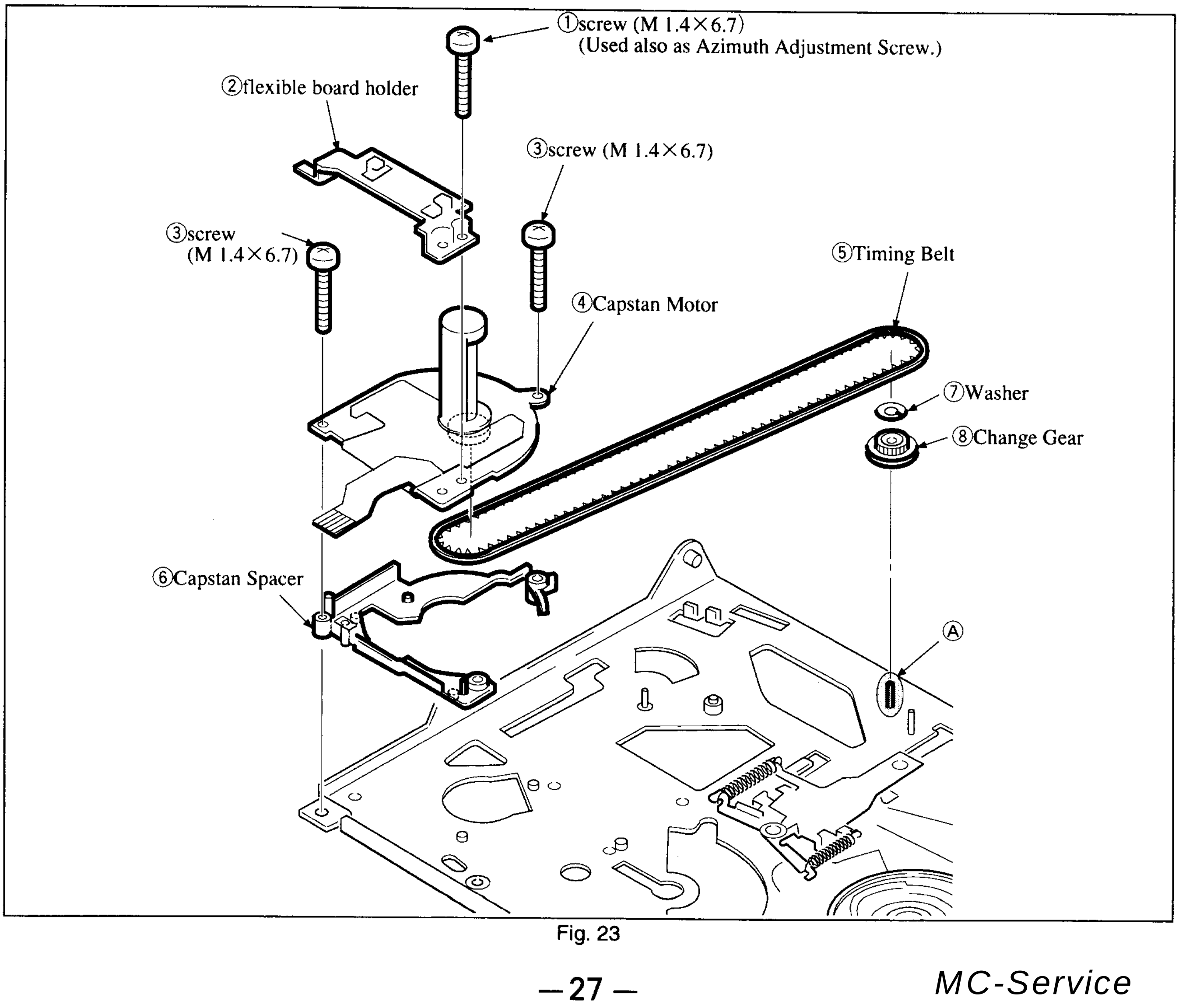

①screw (M 1.4×6.7)
(Used also as Azimuth Adjustment Screw.)
②flexible board holder
③screw (M 1.4×6.7)
③screw
(M 1.4×6.7)
⑤Timing Belt
④Capstan Motor
⑦Washer
⑧Change Gear
⑥Capstan Spacer
Ⓐ

Fig. 23

3-18. Tension Regulator Position Adjustment (Refer to Fig.24)

1. Adjustment Procedure

1) Insert a cassette Tape and run the Tape in PB mode.
2) While tape is running, confirm that the distance between the LS Chassis and TG-1 Guide's top flange is 8.3mm.
3) If not, proceed to step 4).
4) Loosen the screw ① (M 1.4×3).
5) If the TG-1 Guide is located inside the specified position, move position of the Tension Regulator Band Assy using the FWD B.T. Adjustment tool screwdriver (Ref. No. J-9) as shown in the direction of the arrow Ⓐ. If it is located outside, move it in the direction of the arrow Ⓑ.
6) Tighten the screw ① (M 1.4×3).

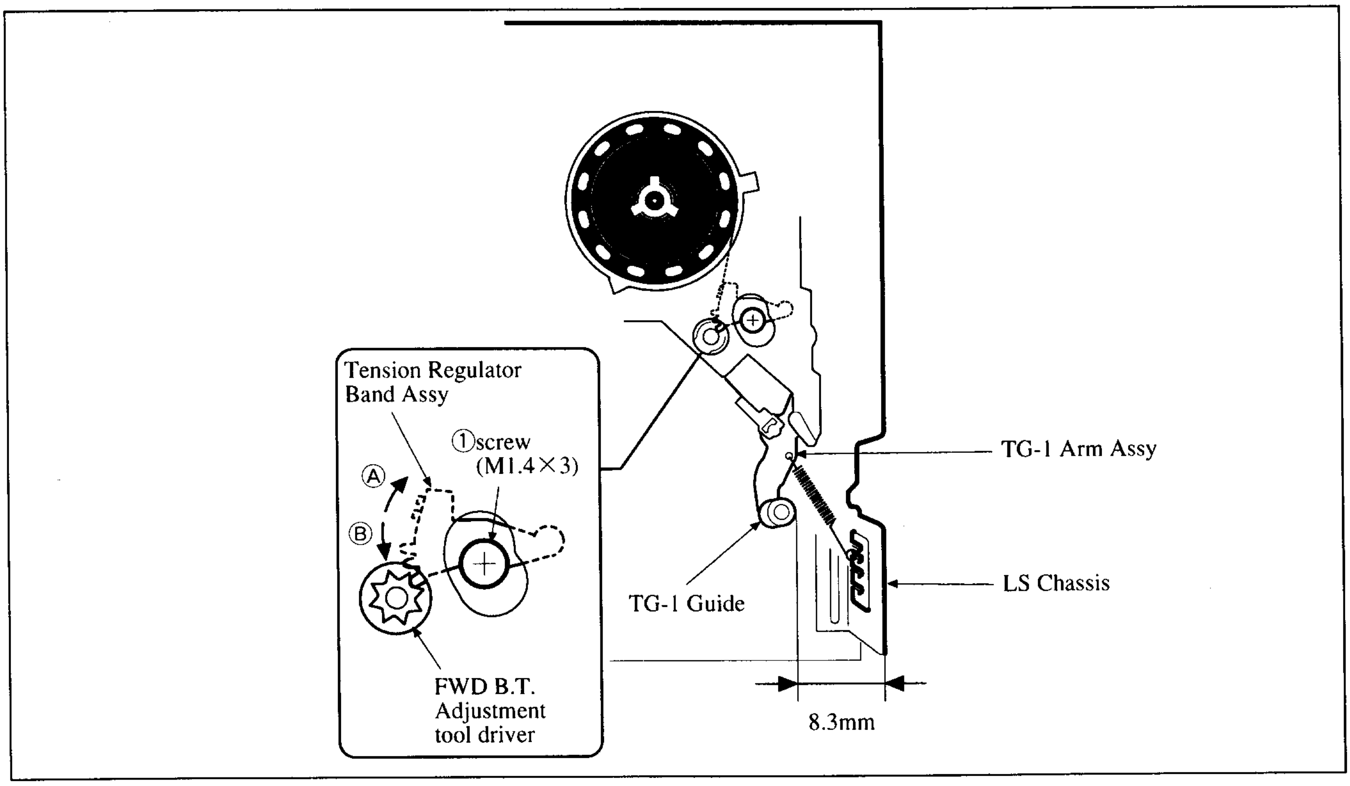

Tension Regulator Band Assy
①screw (M1.4×3)
Ⓐ
Ⓑ
FWD B.T. Adjustment tool driver
TG-1 Guide
TG-1 Arm Assy
LS Chassis
8.3mm

Fig.24

3-19. FWD Tape Hold-Back Tension Adjustment (Refer to Fig. 25)

1. Adjustment Procedure

1) Insert the torque measurement cassette to the machine.
2) Put the machine in the FWD mode. Confirm that the reading on the S side is in the range from 8.0 to 10.5 g•cm. If the reading is outside the specification range, make the following adjustments.
3) If the reading is higher than the specification, change the TG-1 Tension Spring to the side Ⓐ.
4) If the reading is lower than the specification, change the TG-1 Tension Spring to the side Ⓑ.

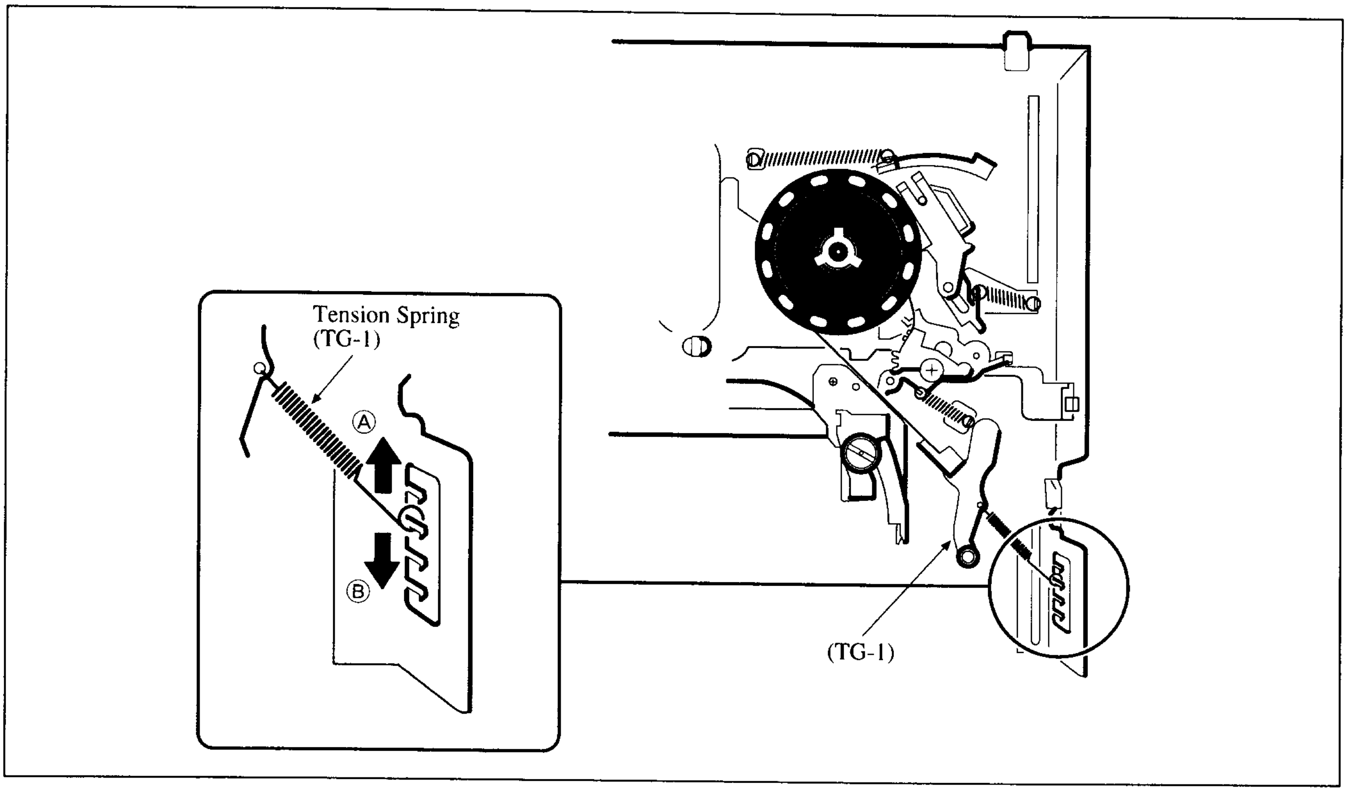


Fig. 25

4. TAPE PATH ADJUSTMENT

Purpose:	Adjusts the head linearity.
Adjustment Error:	Noise appears on top and bottom of display when playing back the tape recorded by other machines.

4-1. Preparations for Adjustments

1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
2) Connect the adjustment remote commander to the REMOTE terminal (JACK block).
3) Establish the PATH mode using the adjustment remote commander (Track Shift mode)* to cancel auto tracking.
4) Connect an oscilloscope.
   CH1: Test connector PB RF terminal
   External trigger: Test connector PB SWP terminal
5) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
6) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
   If it not flat, perform the following section 4-2 until it is flat.
7) After completing the adjustment, release the PATH mode (Track Shift mode).*.

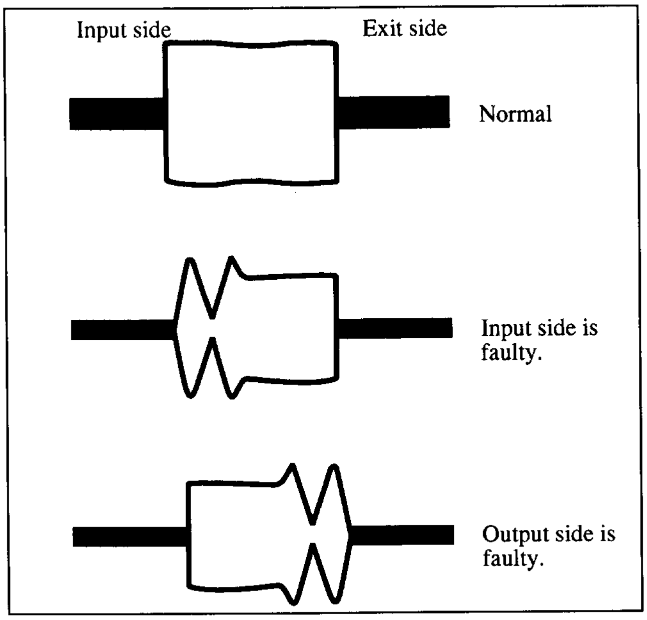


Fig. 26

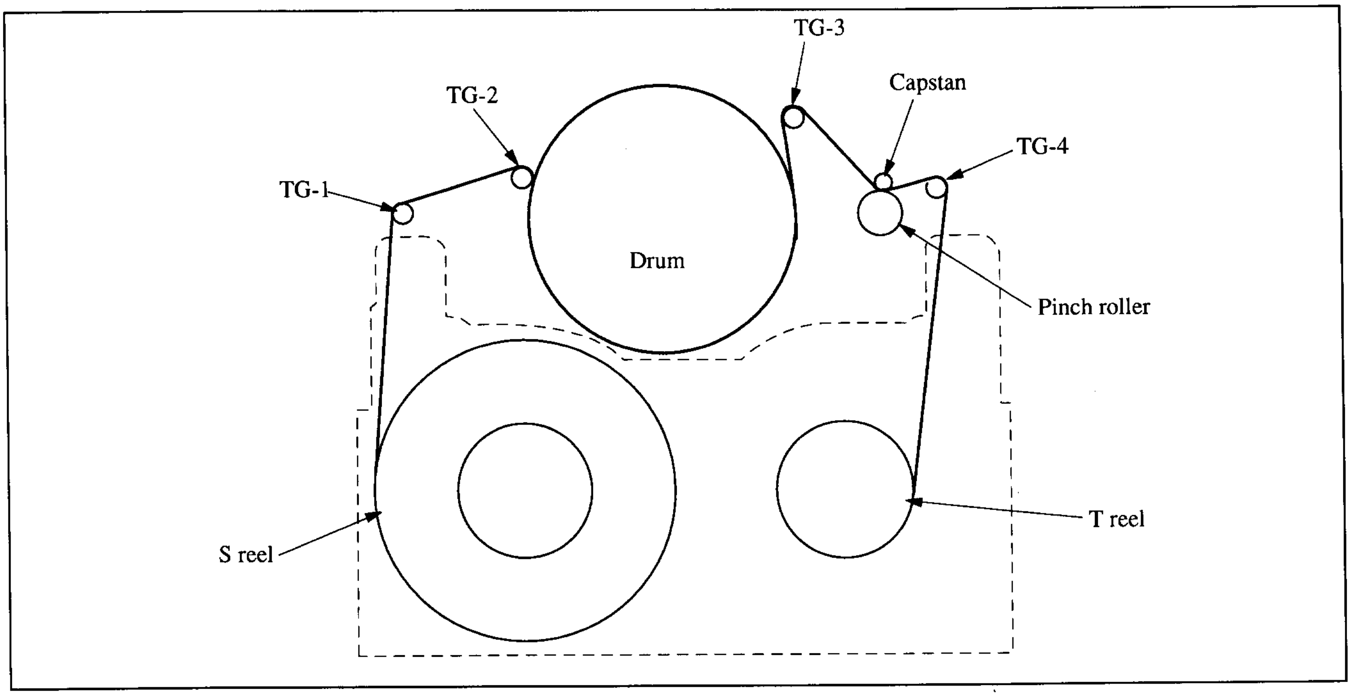


Fig. 27

* How to enter and exit the Track Shift mode. (In the case of CCD-TR420E/TR440E)

Entering the Track Shift mode

1. Select page : 6, address : 00 set data : 01 and press the PAUSE button.
2. Select page : 7, address : 01 set data : 03 and press the PAUSE button.

Exitting the Track Shift mode

1. Select page : 7, address : 01 set data : 00 and press the PAUSE button.
2. Select page : 6, address : 00 set data : 00 and press the PAUSE button.

4-2. Tracking Adjustment (Refer to Fig. 28.)

1) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
2) Adjust the tape guide No. 2 until the input side waveform becomes flat.
3) Adjust the tape guide No. 3 until the input side waveform becomes flat.

☆ Zenith adjustment screws for the TG-2 and TG-3 do not need to be adjusted.

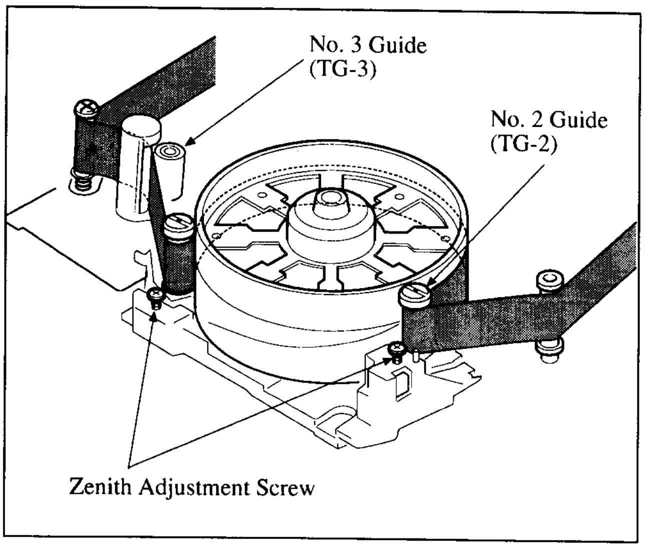


Fig. 28

4-3. No. 4 Guide (TG-4) Adjustment (Refer to Fig. 29.)

1) Playback a tape in REV mode.
2) Confirm that tape slack does not occur in between the guide No. 3 (TG-3) ① and Capstan ②. If tape slack is found, turn the height adjustment screw ④ of the Guide No. 4 (TG-4) ③ until tape slack is removed.
3) Playback a tape in FWD mode. Confirm that tape slack does not occur in between the guide No. 4 (TG-4) ③ and capstan ②. (Specification = 0.5 mm or less) If tape slack of more than 0.5 mm is found, turn the TG-4 nut ④ until the slack is 0.5 mm or less. Playback tape in REV mode and confirm that tape slack in between the guide No. 3 (TG-3) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

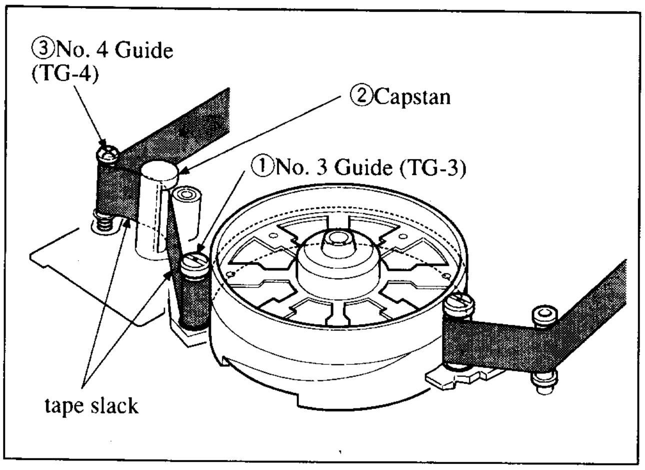


Fig. 29

4-4. CUE, REV Waveforms Check (Refer to Fig. 30.)

1) Playback the tracking alignment tape in REV mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform sections "4-2. Tracking Adjustment" and section "4-3. No. 4 Guide Adjustment".
2) Playback the tracking alignment tape in CUE mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section "4-2. Tracking Adjustment".

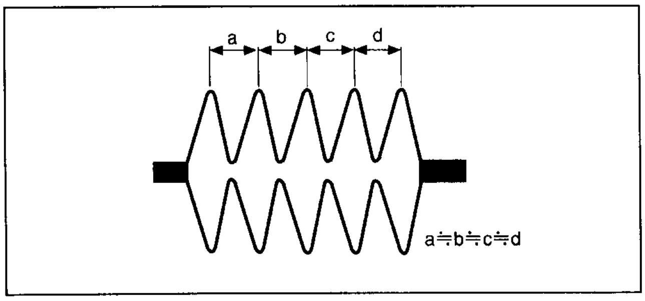


Fig. 30

4-5. Checks After Adjustments

4-5-1. Tracking Check

1) Confirm that amplitude of the RF waveform decreases to about 3/4 when the machine enters the PATH mode. (Refer to Fig. 31)
2) Confirm that the minimum amplitude (EMIN) of the RF waveform is 65 % or more of the maximum amplitude (EMAX). (Refer to Fig. 32)
3) Confirm that the RF waveform does not have too much fluctuation. (Refer to Fig. 33)

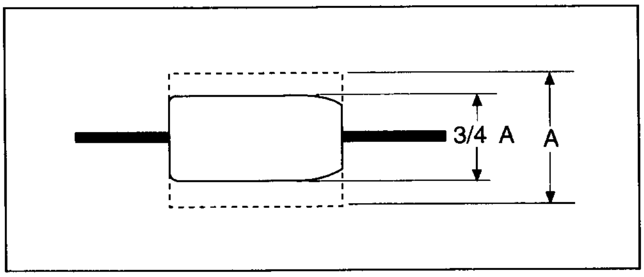


Fig. 31

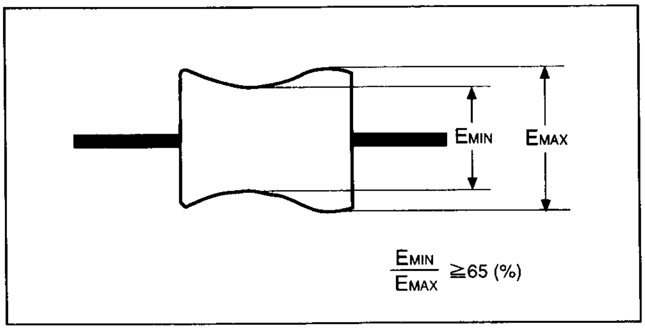


Fig. 32

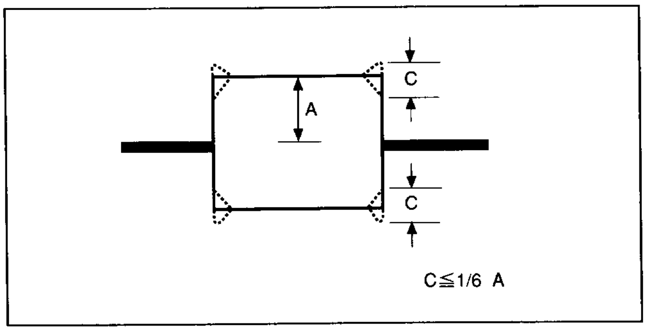


Fig. 33

4-5-2. Waveform Build-up Check (Refer to Fig. 34.)

1) Playback the tracking alignment tape.
2) Turn OFF the Track Shift mode.
3) Eject the tape once, insert and load the tape.
4) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
5) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
6) Repeat the check items 3) to 5) again.

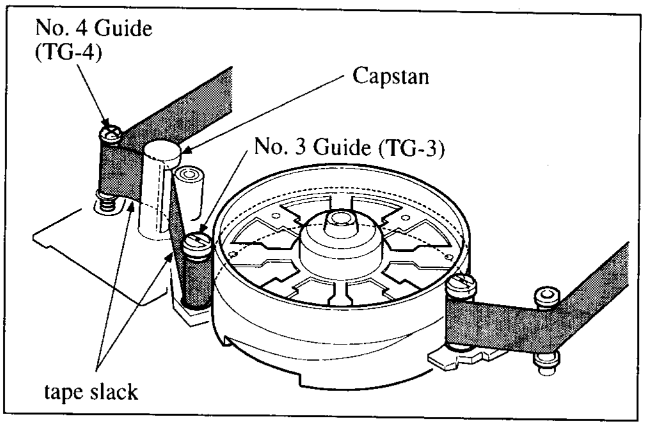


Fig. 34

4-5-3. Tape Pass Check (Refer to Fig. 35.)

1) Insert a thin video tape such as P6-120MP (NTSC) or P5-120MP (PAL). Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No. 2, upper flange of guide No. 3, upper and lower flanges of guide No. 4.
2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

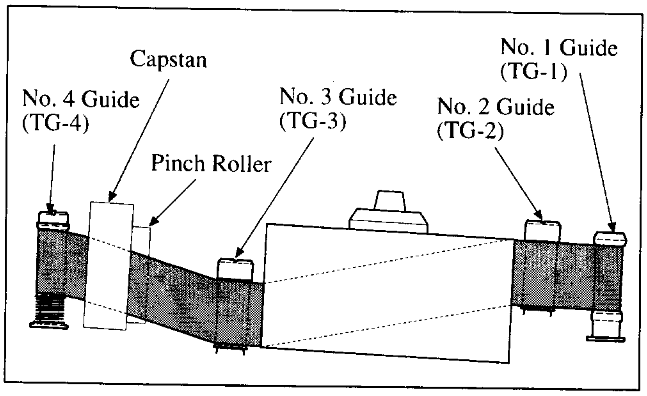
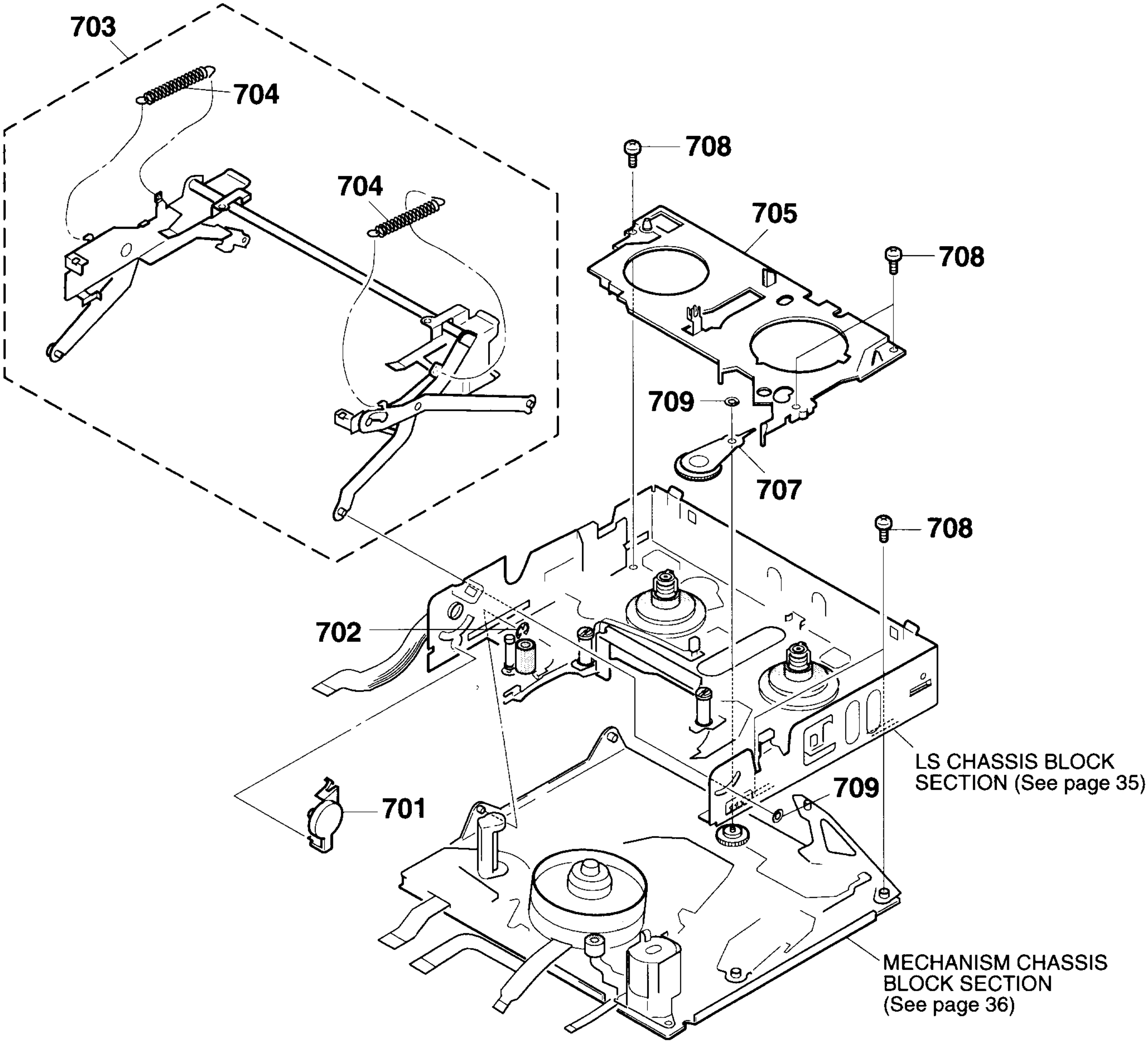


Fig. 35

5-1. Cassette Compartment Block Section


703
704
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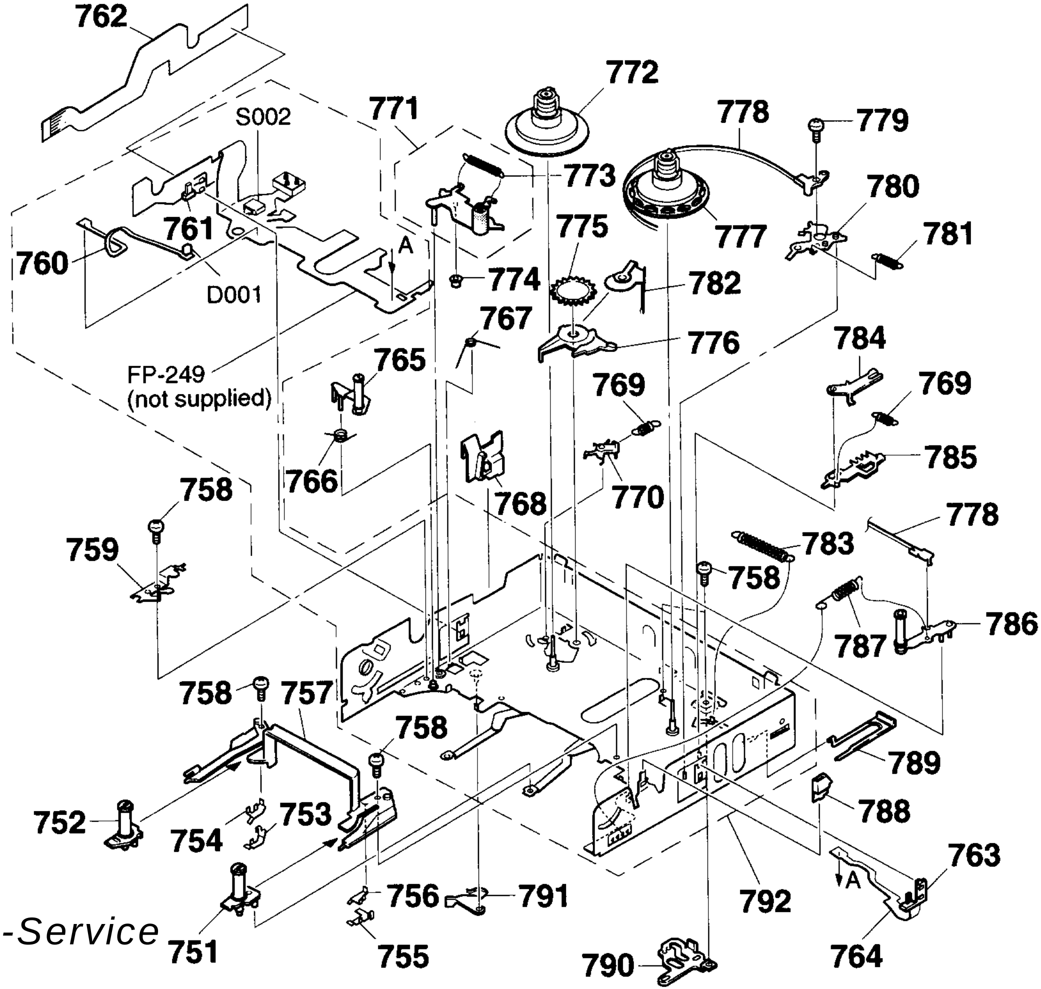
702
LS CHASSIS BLOCK SECTION (See page 35)
709
701
MECHANISM CHASSIS BLOCK SECTION (See page 36)

5-2. LS Chassis Block Section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784
765
FP-249
(not supplied)
769
769
785
766
768
770
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778
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783
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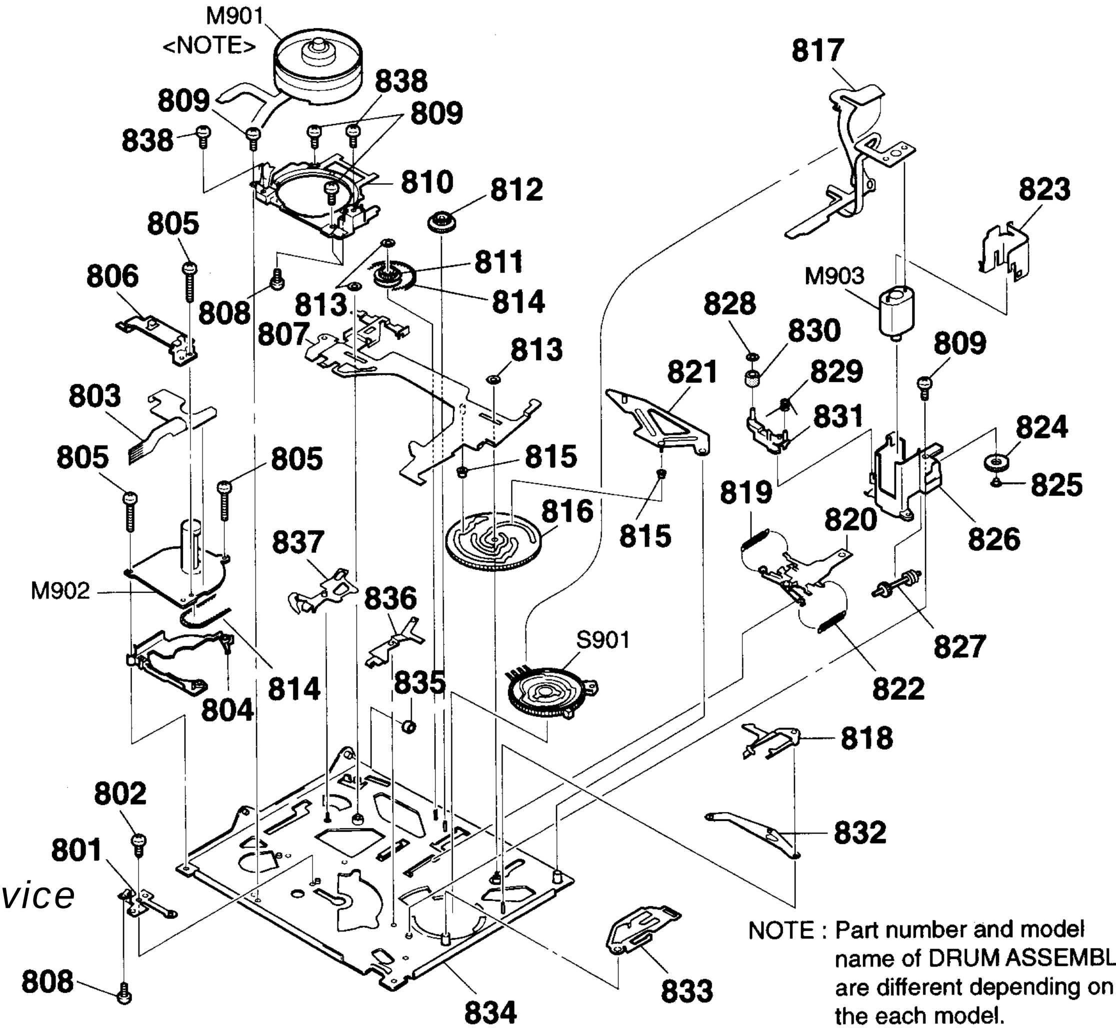
5-3. Mechanism Chassis Block Section


M901
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MC-Service

NOTE : Part number and model name of DRUM ASSEMBLY are different depending on the each model.